SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

PHYLLIS SMALL and DENISE FUBINI, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

LORILLARD TOBACCO COMPANY, INC., LORILLARD, INC., LOEWS CORPORATION, COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110949/96

(Caption continues...)

Video Deposition of

SUE IRELAND

(Taken by Plaintiffs)

Greensboro, North Carolina

Thursday, October 23, 1997

9:09 a.m.

CONFIDENTIAL

Property of: Ness, Motley
Main PI File Room
Charleston, SC

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SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

MARY ANN HOSKINS, Executrix of the Estate of Edwin Paul Hoskins, WALTINA BROWN and DANTE AUBAIN, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

R.J. REYNOLDS TOBACCO COMPANY, RJR NABISCO, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110951/96

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

SHARLENE HOBERMAN and AUDREY HULSE, as Executrix, on behalf of the Estate of Lewis Hulse, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

BROWN & WILLIAMSON TOBACCO CORPORATION, B.A.T. INDUSTRIES P.L.C., BATUS, INC., BATUS HOLDINGS, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.

Defendants.

Index No. 110953/96

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SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

ROSE FROSINA, ELIZABETH COLAVITO and ANILDA ROSS, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

PHILIP MORRIS, INC., PHILIP MORRIS COMPANIES, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee) AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110950/96

SUPREME COURT OF THE ESTATE OF NEW YORK
COUNTY OF NEW YORK

CATHERINE ZITO, PETER HOBERMAN, and GEORGE ELISSEOU, individually, and on behalf of others similarly situated,

Plaintiffs,

- against -

THE AMERICAN TOBACCO COMPANY, INC., AMERICAN BRANDS, INC., COUNCIL FOR TOBACCO RESEARCH-USA, INC. (Successor to Tobacco Industry Research Committee), AND TOBACCO INSTITUTE, INC.,

Defendants.

Index No. 110952/96

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A P P E A R A N C E S:

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For New York Plaintiffs
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SHOOK, HARDY & BACON
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Kansas City, Missouri 64105-2118
BY: CRAIG GUSTAFSON, ESQ.
For Lorillard Tobacco Company and
Lorillard, Inc.
(816) 474-6550

ALSO PRESENT:

JAMES A. WILSON
Senior Associate General Counsel
Lorillard Tobacco Company

JOHN GIRDLER, Videographer

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WITNESS	DIRECT	CROSS	REDIRECT	RECROSS
Sue Ireland				
MR. GOTTLIEB	9			

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P R O C E E D I N G S

VIDEOGRAPHER: This is the videotape deposition of Sue Ireland. We're going on the record. The time is 9:09 a.m. In the matter of the New York Tobacco Class Action Litigation, index number 110-9449/96.

This deposition is being held at the offices of Brooks, Pierce, McLendon, Humphrey and Leonard, L.L.P., 230 North Elm Street, Greensboro, North Carolina, on Thursday, October 23rd, 1997.

My name is John Girdler; I'm the video specialist. The court reporter is Linda Russell. We are here in association with Waga & Spinelli, with offices located at Four Becker Farm Road, Roseland, New Jersey.

Counsel will now state their appearances for the record and the court reporter will swear in the witness.

MR. GOTTLIEB: My name is Lou Gottlieb from the firm Goodkind Labaton Rudoff and Sucharow, for plaintiffs in the New York class action.

MR. GUSTAFSON: This is Craig Gustafson, Shook Hardy & Bacon in Kansas City,

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for defendants Lorillard Tobacco Company and Lorillard, Inc.

MR. WILSON: James Wilson, with Lorillard Tobacco Company.

MARY SUE IRELAND,

having been first duly sworn, was examined and did testify as follows:

EXAMINATION

BY MR. GOTTLIEB:

Q. Ma'am, could you please state your full name for the record.

A. Mary Sue Ireland.

Q. And would it be okay if I just refer to you as Dr. Ireland, today?

A. I'm a -- I don't have a Ph.D.

Q. I'm sorry. Miss Ireland? Ms. Ireland?

A. Fine. You can call me Sue.

Q. Okay. Have you ever been deposed before, Ms. Ireland?

A. No.

Q. During the course of this deposition, I'll be asking you a number of questions. If at any time my question seems unclear to you, please let me know and I'll try

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to rephrase it and make it more clear. There's a number of preliminary questions I have to ask; but, one, are you under any medication today?

A. No. I forgot to take my pill. I take -- no. Hormones.

Q. There's no reason why you -- there's no reason why you would not be able to understand my questions and give thoughtful answers?

A. Not that I know of.

Q. Because it is a deposition, you need to give a verbal response to all questions; a shake of the head or a nod would not be sufficient, because your answers have to be recorded. Is that agreeable?

A. Fine.

Q. And I will, for the most part, try to complete my question, and then you'll give an answer, and I will try to wait until you give your whole answer until I ask another question.

Could you briefly tell me your educational background since you graduated from high school.

A. I have a degree from Elon College.

Q. In what area?

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A. Majors in Spanish and chemistry. I have done some graduate studies, but no full degree from a graduate -- postgraduate work.

Q. So your -- you basically have a BA degree in chemistry?

A. BA/BS.

Q. And can you tell me your work history since the time you left college.

A. I taught school for one year. And then I worked for Vick Chemical.

Q. When was that?

A. I left school in '54, I believe. I worked at Vick's from, what? '55 to '65. Somewhere along in there. About ten years.

Q. In what capacity?

A. I was supervisor of their analytical laboratories. That was the final position I held.

Q. What, just briefly, did that job entail?

A. We did analyses on raw materials and finished products for the Vick line of pharmaceuticals.

Q. And after 1965 did you change jobs?

A. I went to work with Lorillard.

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Q. In what capacity?
A. I was a chemist in basic research.
Q. And did your job ever change at Lorillard?
A. Well, I was promoted, with time, to the final rank of scientist. I served as supervisor of the analytical laboratories for several years, then later of man -- it was manager of the analytical development section.
Q. When you were a supervisor of the analytical department --
A. Uh-huh.
Q. -- what was your job function there?
A. To run analyses on whatever was requested and to do basic research on tobacco and whatever was of interest to the company or to us or ...
Q. How many people were you supervising?
A. I think there were about -- it's -- you know, this is vague, and I'm saying off the top of my head. I think there were about ten scientists and a couple of technicians.
Q. When you later became a manager of the analytical section, how many people were under your supervision at that point?

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A. It was about the same job, they just changed titles, essentially.

Q. In 1965, when you were a chemist for Lorillard, what type of work were you doing at that point in time?

A. We were doing basic research, again, on -- we started out with looking at condensate and trying to analyze the components of condensate.

Q. For what purpose?

A. To see what's there.

Q. You wanted to see how many different compounds were there?

A. See what was there, yeah.

Q. Did somebody tell you whether there was a goal in mind, other than merely to list the compounds in smoke condensate?

A. No. We were just looking to see whatever was there; see what we could identify, if anything, that was of interest to anyone.

Q. Well, did you ever identify any particular compounds that was of interest to somebody at Lorillard?

A. I'm sure everything we identified was of interest to someone.

Q. Well, did you identify hundreds of

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different compounds --

A. Hundreds.

Q. -- in smoke condensate?

A. Hundreds, yes.

Q. And were some of those compounds of greater interest than others?

A. I'm sure they were.

Q. Do you know which ones were of the most interest to people at Lorillard?

A. I would be hard pressed to say.

Q. Could you name any of the compounds at all that were of particular interest to, let's say, management in Lorillard?

A. Well, there were -- well, you know, compounds that we identified that we knew were of interest that had to -- some had been identified before. Then we may try to quantitate -- to quantitate those and see if there was any change along -- down the road on -- if we could modify any of those compounds or -- or fractions.

You know, I don't know if you realize, but these materials were divided into several hundred different, very small fractions. And, you know, the quantities were micrograms,

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which is an extremely small level.

Q. I should have asked --

A. A lot of this work has been -- had been done, and we were just repeating and looking to see how we could -- see if we could identify them, see if there was any modifications that could be done, or see if the literature was actually -- if we could repeat what had been done in the literature.

Q. Replication, in other words, of other scientist's work?

A. Right.

Q. I should have asked this earlier, ma'am, but did you meet with counsel prior to coming to your deposition today?

A. Yes.

Q. And for how long did you meet?

A. Several hours. We were -- what? Three or four hours one time, and probably a couple at another time.

Q. So you met two times?

A. Yes.

Q. And with which attorney did you meet?

A. Craig Gustafson and --

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MR. GUSTAFSON: Jaimie Clark.

THE WITNESS: Jaimie Clark.

BY MR. GOTTLIEB:

Q. Did you review any documents during those meetings with counsel?

MR. GUSTAFSON: I'm going to object, Lou. I think you're getting into an area which violates the attorney/client privilege and the work product doctrine.

MR. GOTTLIEB: I haven't asked about any specific document yet; I've just asked her if she reviewed any documents.

MR. GUSTAFSON: Well, I'll let you -- I'll let you respond to that.

THE WITNESS: Yes, we looked at some --

BY MR. GOTTLIEB:

Q. Were those documents that you had in your possession?

A. Not -- some of them may have been at one time or another. You know, you're going back 20 years. I don't know specifically -- a lot of them that I looked at I had not had in my possession, essentially.

Q. So these were not documents you had

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around your house --

A. Oh, no.

Q. -- these were documents that your attorneys brought and showed you; is that correct?

A. No. I don't have any documents at my house, that I know of.

Q. Relating --

A. Something filtered into something.

Q. Okay.

A. I'm sort of a pack rat.

Q. So these documents that you looked at, are documents that your attorney brought to you; is that correct?

A. That -- that he had at his disposal.

Q. Okay.

A. Could I ask a question? Just what is the exact nature of this trial? Or whatever.

Q. Well, the --

A. Am I allowed to know that?

Q. I don't see why not.

The general nature of the allegations is that there are fraud and consumer deceptive practice claims brought against the tobacco companies with respect to nicotine and

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the addictive nature of nicotine.

A. Thank you.

Q. You're welcome.

Since we brought up the issue of the addictive nature of nicotine, do you have -- do you have any knowledge as to whether or not nicotine is an addictive substance?

A. I have heard rumors to that effect, but it was not, in my case.

Q. Now, when you say you heard rumors to that effect, at what point in time?

A. Well, most recently in -- with the trials in Waxman, and the Attorney General and some of those --

Q. Since 1994?

A. Yes, uh-huh. I think that's probably the first time I heard of it as an -- as an addictive substance.

Q. Did you never hear -- let me rephrase that.

During the point of time that you were working at Lorillard, let's say in the '60s or the '70s, or the '80s, did you ever consider nicotine to be an addictive substance?

A. No.

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Q. Was that a topic that was ever discussed among employees at Lorillard?
A. Not with me.
Q. When did you leave Lorillard?
A. I think it was '94. I think I retired in '94. Unless it was '93. It seems like only last week. Time flies when you're having a good time.
Q. Well, let me show you a document. We can mark it as Exhibit 1.
And it's from you, Ms. Ireland, to Dr. Minnemeyer. It's dated July 16th, 1976. And it's subject is "Research Proposal Development of Assay for Free Nicotine".
A. Uh-huh.
Q. I just want to give the court reporter a chance to mark it.
(EXHIBIT NUMBER 1 WAS MARKED FOR IDENTIFICATION)
BY MR. GOTTLIEB:
Q. Who is Dr. Minnemeyer? At least, what was his position in 1976?
A. In 1976? He was -- I reported to him. He was director of research; I guess that that was his title.
Q. Okay. And did you write this

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memorandum to him?
A. Apparently I did.
Q. Do you have any recollection of having written this memorandum?
A. It's not brilliantly clear, but, you know, it's -- obviously I did write it.
Q. Okay. Just in terms of definitions, the subject includes the words "free nicotine". What is free nicotine?
A. Supposedly, that is nicotine that is not bound as a salt or tied up in any way. It's nicotine as the base.
Q. Why do you say "supposedly"?
A. Well, I never was able to measure free nicotine.
Q. Did you attempt to measure free nicotine?
A. A lot of the tobacco scientists attempted to measure free nicotine, based on pH. You know, there are so many reactions going on in a vapor phase at any given time, that it's -- it's -- well, we found we were not able to do it.
Q. Did you -- during what period of time did you attempt to measure the amount of

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free nicotine in Lorillard cigarettes?
A. I would say probably sometime after this period. And I -- I really don't know. I would say sometime in the late '70s or '80s, or somewhere along that period of time.

You know, these things are ongoing. Research projects that are finished in ten years are considered short.

Q. Well, was there continuing attempts to measure --
A. In my opinion.
Q. I'm sorry?
A. That was in my opinion.
Q. Okay.

Were there continuing attempts at Lorillard to measure free nicotine up until 1993 or '94, when you left?
A. I think we had essentially tried -- given up trying to measure free nicotine in the vapor phase. There were attempts to measure the pH, which is related to, supposedly, free nicotine in the condensate. But that was, again, not satisfactory and would not have determined the active -- or -- you know, the -- the pH of the material as it was consumed by the consumer or

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used by the consumer.

In other words, the consumer is -- uses -- there's a vapor phase. And once it's condensed, it, of course, has changed considerably.

Q. So you were measuring pH in the vapor phase?

A. That was what we were attempting to measure. That would have been the ideal pH measurement.

Q. Did you also measure pH in the condensate?

A. There were attempts, later on, to look at the pH in the condensate.

Q. And what period of time is this that we're talking about?

A. I think -- this was not myself or my group; but at Lorillard there were people that were trying to measure the pH of the condensate.

Q. At what time period?

A. I think they were probably doing some along about the time I left in -- with varying degrees of success and not necessarily reproducibility that would be satisfactory.

Q. Do you know which Lorillard

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researchers would have been in charge of that project?

A. I don't know that anybody -- well, the person that I remember doing it most was Dr. Art Ihrig, who was in the physical testing section.

Q. Can you spell that person's name.

A. I-H-R-I-G.

Q. And during what time was Dr. Ihrig doing this kind of research?

A. As I said, he was probably still doing some by the time I left. And may have done some earlier; I don't -- I don't really remember. That was in a different section; that was a physical testing group, and they're different.

Q. Do you know the earliest time period at which Lorillard was measuring pH?

A. Well, as I said, I don't know that we ever successfully measured it. And I cannot remember -- I know that we did try to. We had been to a tobacco chemist conference -- conference, and one of the scientists had developed a procedure where he supposedly measured pH of the vapor phase. We tried to reproduce his results and were not successful.

Q. Let's go back to this document that

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I've handed to you.
A. Uh-huh.
Q. And it begins as follows: (Reading)
Cigarette sales are made for one reason. The customer is satisfied with the product, either from the taste or the physiological satisfaction derived from the smoke.
What physiological satisfaction were you referring to in that sentence?
A. That's just a general term that, you know, I don't really have any specific means; it's just a term that's used in the literature that means that you're satisfied. Specifically, I have no specific change -- means -- you know, I just don't have a specific meaning for that, other than you're satisfied.
Q. But the satisfaction is of a -- shall we say, a physical nature rather than a psychological nature; is that your understanding?
A. I would -- yes. True.
Q. The document continues as follows:

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(Reading)

The consensus of opinion derived from a review of the literature on the subject indicates the most probable reason the addictive properties of the smoke is the nicotine.

Did you write that, ma'am?

A. It says I did.

Q. What addictive properties were you referring to?

A. I'm sure I took that directly from the literature.

Q. Is this a literature search that you conducted yourself?

A. As well as I remember, you know, reviewing what -- what was in the literature about tobacco chemistry or even, perhaps, help from the library staff. I don't even remember at that time what -- what the level of our library staff was.

We were -- we were in the new building then, I guess. I think we were in the new building then, and we did have a larger

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library. At one time we had a library that consisted of one person, who was a part-time secretary for Dr. Spears. So, you know, we didn't have a large staff.

Q. And that would have been prior to 1976 --

A. Yes.

Q. -- to the best of your recollection?

A. Yes. Because we had moved there then. Uh-huh.

Q. Did somebody ask you to conduct a literature review regarding the addictive nature of nicotine?

A. I don't remember any such directions, no.

Q. Well, do you know what prompted you to conduct a review of the literature on that subject?

A. Somebody probably just said: Let's see what we can find out about nicotine.

I really don't recall any specific words. But I would imagine somebody said: Let's see what we can find out about nicotine, or -- you know.

Q. And you don't recall who it was who gave you that instruction?

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A. No.

Q. Do you recall how many -- how much time you spent in the literature review?

A. No.

Q. How many articles you may have looked at?

A. No.

Q. On the specific topic of whether or not nicotine is addictive, do you recall how many articles you saw on that topic?

A. I don't remember even recalling -- seeing anything that said nicotine was addictive; but apparently it was there.

Q. Okay. When it says the "consensus of opinion," does that mean that you reviewed several articles and most of them came to that conclusion?

A. It may have been. But it may have also been that I read a review article. I don't really remember.

Q. Well --

A. It could have been one article that said what I have repeated here.

Q. In that case, that article would have cited back to numerous other articles in

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the literature?

MR. GUSTAFSON: I'm going to object.

THE WITNESS: Sometimes they do.

MR. GUSTAFSON: Hold on, Sue.

She's testified several times now, Lou, she just doesn't remember hardly anything about what she read, and you keep on asking specifics. Well, she clearly doesn't recall.

So I think the question is improper because it requires her to speculate as to things she's already testified that she doesn't remember.

MR. GOTTLIEB: I don't want her to speculate, but I am entitled to ask questions to see if she remembers some particular parts. Just because she doesn't remember one thing doesn't mean she doesn't remember something else.

THE WITNESS: I barely remember the article -- or the proposal here. And I have no recall at all as to whether I looked at two journals or five journals or one review article. Sometimes there would be a review article of something, and that may have been what I base this on. I really do not know.

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BY MR. GOTTLIEB:

Q. Do you recall having any conversation with Dr. Minnemeyer regarding the subject matter of this memo?

A. No.

Q. Do you recall having any conversation with Dr. Minnemeyer regarding the addictive nature of nicotine?

A. No.

Q. Do you recall having a conversation with anyone at Lorillard regarding the addictive nature of nicotine?

A. No.

Q. If I were to change the word from "addictive nature" and I used instead the words "dependence producing," would that change your answer?

A. No.

Q. How about "habit-forming"? Would that change your answer?

A. No.

Q. Your memo continues as follows: (Reading)

Indications are that the smoker adjusts his smoking

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habits to satisfy the desire for nicotine, either by frequent or large puffs on the cigarette, or smoking a large number of cigarettes.

Is this something you learned from literature?

A. I don't know that I learned it from literature or whether I had just heard it in conversations. I have no -- I don't recall.

Q. Do you know whether this is an area in which Lorillard did testing?

A. As to -- would you restate that --

Q. As to whether or not a smoker adjusts his habits to satisfy his desire for nicotine.

A. There were some studies done to evaluate the puff volume. Now, whether that had anything to do with nicotine, I do not know; and my opinion is no.

Q. Could you describe the general nature of those studies on puff volume.

A. They had rigged up some method to see how much volume a smoker took into their mouth at a given -- on a given type cigarette.

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Q. Did they give the smoker cigarettes with different amounts of nicotine in it?
A. Nicotine, I do not -- I don't know. But I would say no, as far as -- I don't know that that was ever measured. It was strictly a volume thing.
Q. Do you know the puff volume used in the FTC reporting methods?
A. Thirty-five milliliters.
Q. And --
A. Per -- 35cc's per second of two-minute -- two-second duration, I believe. Something like that. I used to know, but I don't know it anymore.
Q. Would it be 35cc's --
A. 35 cc's of two-second -- taken in a two-second duration, yeah.
Q. Every 60 seconds?
A. It seems like it's every two minutes or something. I've forgotten. I did not -- I was not involved in that area.
Q. Do you know whether Lorillard -- Lorillard's testing on puff volume found that the average cigarette smoker took in more, less, or the same as the FTC-reported volume?

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A. I'm sure that there was some -- I don't have those figures in my mind, but general thought is some of them are much less, some of them are much greater. And if you average them all, you probably come out somewhere around the standard puff volume.

Q. By "standard," you mean the FTC reporting?

A. The FTC, right.

Q. To get back to this document. It states: (Reading)

> According to a number of authors, "free" nicotine produces a more immediate impact on the smoker. (I have found no references regarding the sustained satisfaction of free nicotine versus bound nicotine). Thus the popular "impact," [and that word impact is in quotations] connotation.
>
> It is generally agreed at this time that a "small" amount of free nicotine is

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more desirable than a "large" amount of bound nicotine.

Is that information that you found in the literature in 1976?

A. Yeah, I may have found -- I -- I don't know. With all of the quotes and everything, it would seem like that was a hypotheses that I had come up with. And it doesn't look like there was any absolute foundation in fact that would substantiate all of that.

You know, you get ideas from reading the literature, and then you -- you propose a -- a project to try to find out if it's true or not, sometimes.

Q. Well, when it says here that a number of -- "according to a number of authors, free nicotine produces a more immediate impact on the smoker," that's based upon your review of the literature; is that correct?

A. Either that, or a review of a review.

Q. Okay.

A. It seems like, uh-huh.

Q. Do you recall which it was in this case?

A. No.

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Q. Was the area of free nicotine, in general, an area that the Lorillard research department was interested in during the '70s and '80s?

A. Not to my knowledge. Apparently we became interested sometime along this period to a certain extent. But we didn't have a hot pursuit team looking at it, as far as I know. I don't think we ever did really do anything, other than try to do measurements and that sort of thing. But being unsuccessful was not -- didn't cause us to keep on and on and on.

And, in fact, it refers to a 1929 publication, and I -- I can't even imagine whatever they were using to measure free nicotine. You certainly couldn't do it with a pH meter, which was about the only thing that was available at that time. It -- to my knowledge.

Q. Did researchers at Lorillard agree -- well, let me strike that.

Did you have an opinion as to whether this statement is correct, that: (Reading)

It was generally agreed

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that a small amount of free nicotine is more desirable than a large amount of bound nicotine?

Did you think that was a correct hypothesis

A. I don't know that I had an opinion.

Q. Did you ever have an opinion on that subject?

A. Not really.

Q. In other words, not in 1976, perhaps; by 1994.

A. No, not really. Because, if you can't measure something, how can you know whether it's important or not? And we were never able to measure it. Not in my -- not in my area.

Q. Were there ever attempts to determine the amount of free nicotine in various Lorillard products?

A. As I have said earlier, we tried to measure nicotine by some scientist's procedure and never got results that I would -- that anybody would think were meaningful. We were unable to even duplicate what had been printed in the literature, which is not unusual.

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MR. GUSTAFSON: Can we go off the record for just one moment?

VIDEOGRAPHER: We're going off the record at 9:43 a.m.

(DISCUSSION OFF THE RECORD)

MR. GUSTAFSON: We can go back on the record.

(EXHIBIT NUMBER 2 WAS MARKED FOR IDENTIFICATION)

VIDEOGRAPHER: We're going back on the record at 9:43 a.m.

BY MR. GOTTLIEB:

Q. Ms. Ireland, I just handed you a document dated October 7th, 1976, entitled "The Pharmacology of Smoke-Dose Nicotine, A Review of Current Literature," submitted by Dr. H. S. Tong.

Do you know who Dr. Tong is?

A. He was there briefly, after I came to work at Lorillard.

Q. Well, in 1976, do you know what his position was at Lorillard?

A. He was a pharmacologist, toxicologist, something like that. I don't know what his exact title was.

Q. Have you ever seen this document

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before?

A. Not that I am aware of. I may have, but it's not embedded in my memory.

Q. Now, this document was apparently written about two or three months after the memo that I had just shown you.

A. Uh-huh.

Q. And this document states, in the beginning of it, as follows: (Reading)

> A review has been made of the literature on the pharmacology of smoke-dose nicotine with the goal of discovering some indications of threshold dose and optimum doses of nicotine in the average cigarette smokers.

Did Dr. Tong discuss this subject with you at all?

A. No.

Q. Are you familiar with the idea of an optimum dose of nicotine for the average cigarette smoker?

MR. GUSTAFSON: Objection. The question is vague and ambiguous. I don't know

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what you mean by "familiar with the idea".

BY MR. GOTTLIEB:

Q. Do you know whether there is an optimum dose of nicotine for the average cigarette smoker?

A. No.

Q. Is that a subject that you have ever discussed at Lorillard?

A. No.

Q. About five lines down, the sentence reads as follows: (Reading)

> It seems that, within limits, smokers can and do control their nicotine intake from smoke by varying their smoking techniques.

Is that an -- first of all, do you agree with that?

A. That's just a supposition, it seems to me. If I say I agree, that means I think it's fact, and I do not necessarily think that's a fact.

Q. Do you know whether Lorillard has done any studies to determine whether that is correct?

A. No. I do not.

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Q. You don't know?
A. I don't know.
Q. On the second page under "Production," it says: (Reading)

> Despite the lack of definitive knowledge, it seems probable that smokers choose cigarette smoking for sensual, psychological, social, cultural and pharmacological effects.
>
> Number 1: The pharmacological effects most likely are due to the action of nicotine since the presence of a variety of other chemical components in the smoke in all probability is below their threshold levels.

Would you agree with that statement?
MR. GUSTAFSON: Objection. This is a document which was not authored by Ms. Ireland, doesn't even show that it was copied to her. She has not even been given an

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opportunity to read the document. And I think -- you've read a couple of sentences; I don't know what portion you're asking her to agree to or not agree to. And you're expecting her to agree to sentences that include terms which I think are vague and ambiguous. And, again, it's a document she didn't even write. I think it's a very unfair question.

MR. GOTTLIEB: Okay. Could we limit your objections to "objection as to the form," rather than making a speech?

MR. GUSTAFSON: I will object as I see fit and appropriate.

MR. GOTTLIEB: It's generally considered appropriate to have a brief objection to preserve the objection for the record, rather than an objection which is, in effect, a speech or a form of giving instruction to the witness.

MR. GUSTAFSON: I understand that's your position.

BY MR. GOTTLIEB:

Q. Let me clarify this a bit. Do you agree with the statement that the pharmacological effects of cigarette smoking are most likely due to the action of nicotine?

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MR. GUSTAFSON: Objection. The question is vague and ambiguous. Go ahead.

THE WITNESS: I have no expertise in pharmacological areas.

BY MR. GOTTLIEB:

Q. Has there ever been any discussion which you were involved with regarding the pharmacological effects of nicotine on smokers?

A. Not that I recall.

Q. Are you familiar with CNS studies involving nicotine?

MR. GUSTAFSON: Objection.

BY MR. GOTTLIEB:

Q. By CNS, I'm talking about central nervous system studies.

A. No.

Q. Going down to the last line of this page. It says: (Reading)

> The purpose of this review is to determine if there were data which would indicate a threshold dose and an optimum satisfaction dose of nicotine for the majority of smokers.

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Are you aware of any efforts by Lorillard to determine whether there is a threshold dose of nicotine that would satisfy a majority of smokers?

MR. GUSTAFSON: Object to the form of the question.

MR. GOTTLIEB: You can answer.

MR. GUSTAFSON: You can answer it.

THE WITNESS: This is not my area. I have no idea what his thoughts were when he was writing this. I have -- have not a clue.

MR. GOTTLIEB: Okay.

Q. Do you know who S. J. Green was?

A. I don't recall that name.

Q. Do you know a Dr. G. Hook?

A. G. Hook?

Q. Yes.

A. No.

(DISCUSSION OFF THE RECORD)

BY MR. GOTTLIEB:

Q. Are you familiar with a program called the nicotine augmentation project?

A. Yes.

Q. Were you involved in that project in any way?

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A. Yeah.

Q. What was your involvement in that project?

A. Well, I don't know. We were probably looking at analyses and, you know, just what was going on.

Q. Do you know when the nicotine augmentation project began?

A. It's vague. I really don't. I'm sure you probably have more information on that than I do.

Q. I'll see if I can come up with a document that might refresh your recollection.

A. Was it in the '70s or the '80s? I don't really even know. In the past.

Q. Do you know what the goal of the nicotine augmentation project was?

A. Well, there were different thoughts from different people. As far as I was concerned, it was just looking at nicotine and how it behaved.

Some of these projects were sometimes named so that they would have a -- a catchy name. If you --

MR. GUSTAFSON: Just let him ask the questions.

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THE WITNESS: Okay. It may not necessarily mean what they say; it just sounds good.

BY MR. GOTTLIEB:

Q. Well, on the subject of names of projects not necessarily meaning what they say, was there ever any understanding among Lorillard workers -- I should rephrase this.

Did you ever have any understanding that "addiction" was a term that should not be used with respect to nicotine in memos that you would write at Lorillard?

A. No.

Q. Did you ever have an understanding that there would be other words used as code words for addiction?

A. No.

Q. Let me show you as Exhibit Number 3 a document from -- I believe it's Dr. Minnemeyer to Dr. Schultz, dated May 4th, 1976. The subject being "Nicotine Augmentation Project".

(EXHIBIT NUMBER 3 WAS MARKED FOR IDENTIFICATION)

(DOCUMENT HANDED TO WITNESS FOR REVIEW)

BY MR. GOTTLIEB:

Q. The document begins as follows:

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(Reading)

Recommendations from health oriented agencies and pressure from competitive companies make it imperative that Lorillard develop a flavorful cigarette delivering lower tar while at the same time delivering a level of nicotine higher than can be obtained normally by conventional cigarette construction. This goal is almost an absolute necessity for brands delivering less than 8 milligrams of tar. If achieved, technology may be applied to all classes of cigarette to achieve lower tar delivery while maintaining or enhancing current nicotine levels.

To your recollection, does this adequately describe the purpose of the nicotine augmentation project?

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MR. GUSTAFSON: If you need time to read the entire document, Sue, please take the time to do that.

THE WITNESS: It's really difficult for me to say what his thoughts were there. You know, there was a general feeling of -- as far as I was concerned, of looking for a flavorful, satisfactory product.

BY MR. GOTTLIEB:

Q. And for satisfaction, you had an understanding that the smoker desired a certain amount of nicotine?

A. No.

Q. Well, was the whole purpose of the project to give the smoker more nicotine than they would otherwise receive from a cigarette with a given amount of tar?

A. That may be what this thought process indicates, but I disagree that nicotine is what people smoke for.

Q. Do you have an understanding as to why people smoke?

A. It's a very pleasant experience.

Q. Are you a smoker, ma'am?

A. I quit. I did smoke.

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Q. For what length of time?
A. Probably twenty years.
Q. Can you tell me approximately how much you smoked during that time period?
A. It depends on what I was doing. Bridge and some sorts -- was more. But I'd say I was not a heavy smoker. Probably a pack or around a pack; sometimes a half, maybe more.
Q. Between half a pack and a pack a day for twenty years?
A. I didn't start off smoking that many. And then sometimes I would not smoke that many. It would depend on my mood and what was going on and what I was doing.
Q. When did you quit?
A. I think it was around '73/'74.
Q. During the time while you were at Lorillard, you quit?
A. Yeah.
Q. Did you find it difficult to quit?
A. Not particularly.
Q. Did you ever go back to smoking?
A. No. I tried a couple of times and it made me dizzy, so ...
It was just sort of a nuisance.

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Q. Do you recall what your reason was for quitting?

A. It was just a nuisance to make sure that you had cigarettes and ashtrays and matches and that sort of thing, just a bother.

Q. And did you quit successfully the first time you tried to quit?

A. The first time I really decided to, I did. I tried one earlier time and just went back. But it was no -- no big problem.

Q. Do you know whether Lorillard made an attempt to obtain sources of nicotine for the purpose of adding that nicotine to cigarettes?

MR. GUSTAFSON: Objection; vague and ambiguous. Do you mean commercial cigarettes or experimental cigarettes?

MR. GOTTLIEB: Any cigarettes.

THE WITNESS: Would you restate that again.

MR. GOTTLIEB: Sure.

BY MR. GOTTLIEB:

Q. Do you know whether Lorillard made any attempts to obtain nicotine for the purpose of adding nicotine to any cigarettes?

MR. GUSTAFSON: Same objection.

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THE WITNESS: Do I answer?

MR. GUSTAFSON: Yes. Please.

THE WITNESS: We tried to get nicotine to experimentally work with our reconstituted leaf.

BY MR. GOTTLIEB:

Q. So you added -- in experiments, you added nicotine to the RL?

A. Experimentally we added nicotine to the RL slurry.

Q. And what results did you get from that experiment?

A. We were able to add it to the slurry. And it was reasonably stable on the finished product.

Q. And was the finished product tested in any way?

A. Well, we analyzed it for nicotine content. We probably -- I -- I don't remember specifically.

Q. Do you recall whether any of these finished products were given consumer tests?

A. Oh, no. No.

Q. Were they given some sort of a limited testing among a smoking panel at

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Lorillard?

A. I -- I can't say specifically, but -- you know, I just can't say specifically. But certainly there was no -- maybe a half a dozen people may have tried them; or one or two may have. I don't really remember.

Q. Well, do you recall whether the nicotine augmentation project went on for about ten years?

A. I really don't have any conception of the length of time that it was --

Q. Well, we know that it was in existence in 1976.

A. Okay.

Q. We agree with that, right?

A. Okay. That's when it started, yeah.

Q. Well, I was going to ask you that. Do you know whether it started much before that, or is that approximately when it started?

A. You know, that's very vague in my mind, is it the time frame.

Q. Okay. Would it be fair to say that, during the course of the nicotine augmentation project, Lorillard tried a variety of methods to increase the nicotine in cigarettes?

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MR. GUSTAFSON: Object to the form of the question.

MR. GOTTLIEB: You can answer the question.

THE WITNESS: You want to restate it, please?

MR. GOTTLIEB: Yes.

BY MR. GOTTLIEB:

Q. Would it be fair to say, that during the time the nicotine augmentation project was in existence, that Lorillard tried a variety of ways to increase the amount of nicotine that a smoker would obtain from Lorillard cigarettes?

MR. GUSTAFSON: Same objection.

THE WITNESS: That, again, was not in my area. You know, we worked on analyses and things of that nature. That would have been a product development effort, if it was done. And then we would analyze the finished product, if we could, to determine whether or not they had any success.

BY MR. GOTTLIEB:

Q. So your particular area would, say, be to look at the experimental product and chemically determine whether the nicotine indeed

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was increased?
A. Essentially.
Q. And is that something that you did for a number of years?
A. Yeah. You know, again, you're talking about an area that we didn't actually -- you know, we had -- we had a -- a smoking lab that actually did analyses on condensate nicotine. They would do those. But if there were some thought maybe that it might be just a minor change, sometimes we might go in and -- and try to do an analyses.
Q. Were you informed as to whether the experimental cigarettes had acceptance by any sort of expert smokers group?
MR. GUSTAFSON: I'm going to object. I mean, what cigarette specifically are you talking about? What time period are you talking about? I think the question is horribly vague and ambiguous.
MR. GOTTLIEB: Let me rephrase the question.
BY MR. GOTTLIEB:
Q. Did Lorillard have some sort of an expert smokers group -- I'm talking about a

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panel of -- well, let's say half a dozen or a dozen people who would test experimental cigarettes to see if they would satisfy smokers?

A. We had a smoking panel.

Q. And during what period of time did you have that smoking panel?

A. I didn't have that. Lorillard, I'm sure --

Q. By "you," I meant Lorillard.

A. I'm sure Lorillard still has a smoking panel.

Q. Okay.

A. Every cigarette company does.

Q. Do you know how many people would have been in Lorillard's smoking panel?

A. I imagine it would vary, depending on -- you know, that's a product development area.

Q. Do you have an approximate number of people who would have been in that smoking panel?

A. It may have been from one to ten or -- I don't know how many people are in --

MR. GUSTAFSON: Sue, if you know, you can tell him. But as he --

THE WITNESS: I don't really know.

MR. GUSTAFSON: -- instructed you,

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don't speculate and don't guess.

THE WITNESS: Yeah.

BY MR. GOTTLIEB:

Q. Okay. Among the experimental cigarettes produced as a result of the nicotine augmentation project, was it your understanding that the smoking panel would test those cigarettes to see if they passed muster?

A. Well, you make a cigarette and you figure somebody's going to smoke it. Now, that might be one person, and they say "yuk". And if it's pleasant, then they may spread it around.

Q. Do you know whether any of the experimental cigarettes produced as a result of the nicotine augmentation project were judged acceptable by Lorillard's smoking panel?

A. I don't know absolutely, but they never went anywhere.

Q. By never going anywhere, you mean they were never put into commercial production; is that correct?

A. Probably never even made the second batch.

Q. Well, do you know for a fact whether or not any of the commercial -- excuse me, whether any of the experimental cigarettes

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produced by Lorillard, pursuant to the nicotine augmentation project, were ever test marketed?

A. No.

Q. No, they were not or no you don't know?

A. No, they were not.

MR. GUSTAFSON: Sue, whenever you need to take a break, just speak up and we'll --

THE WITNESS: We'll be through in a few minutes.

MR. GOTTLIEB: An optimist.

THE WITNESS: An eternal optimist.

(DISCUSSION OFF THE RECORD)

(EXHIBIT NUMBER 4 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. We've marked as Exhibit Number 4 a one-page document entitled "Research and Development Project Request," dated May 5th, 1976. The project name is "Nicotine - Delivery".

At the bottom of the document is a statement that the project leader was Ms. Ireland. Do you recall being project leader of a nicotine delivery project?

A. As well as I remember, we never did

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anything on this project. I mean, you write proposals; you work on some; some are just project proposals.

Q. Who would have made this proposal?

A. Well, probably some of the guys down there that were group members. Part of their job is to make proposals.

Q. By "some of the guys," you're referring to Skladanowski, Larson, Morgan and Routh?

A. Right.

Q. And these are all members of the research and development department?

A. They were members of analytical development section.

Q. And were you --

A. As far as I remember.

Q. Were you one of the people who would have had some input into proposing this project?

A. Not necessarily.

Q. Well, do you recall in fact whether or not you were?

A. Not really. You know --

Q. It says: (Reading)

The principal project

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objective of this project is to increase mainstream delivery of nicotine and impact of available nicotine.

Do you have an understanding what it means -- what the phrase "impact of available nicotine" means?

A. No. Okay? No.

I have problems with the definition of "impact," relative to nicotine.

Q. Okay, what are the problems?

A. The problem is that I don't think nicotine is the source of impact. By "impact," I mean mouth feel and the way it feels in your mouth and your throat, in your -- you know.

Q. What do you think is the source of impact?

A. I don't really know. I think it's probably a combination of things. You know, just -- there are a lot of vapor products and acids and bases and a whole number of things in the vapor phase of smoke. Nicotine happens to be one of them.

Q. Is it one of the major constituents in vapor smoke?

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A. I don't remember what the percentage is; have no -- have not a clue. Don't know that I ever knew.

Q. On what do you base your opinion that nicotine is not the source of impact, as you define the word "impact"?

A. Well, when I was smoking, you know, you smoke one and another with no -- the nicotine level might be the same -- the measured nicotine level by FTC procedure might be the same in both of them; you liked one, you didn't like the other. So, you know, who knows?

Q. Now, you said "liked". That's not the same as "impact," is it?

A. I'm sure it's all wound up together. It's difficult to separate your -- your feelings and your senses --

Q. Well, would it be --

A. -- one from another.

Q. Would it be fair to say that you can have two cigarettes with the same amount of impact, but one tastes good and one does not taste good?

A. Yeah. Sure. Just like Coke and Pepsi; you know, some of them are good to you and some of

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them are not.

Q. Well, do you have any studies that you can cite that tells me that nicotine is not related to impact?

A. No.

Q. Did Lorillard do any studies on that subject, to determine whether or not nicotine is related to impact?

A. Not to my knowledge.

Q. To your knowledge, was it generally accepted by people at Lorillard that nicotine was related to impact?

MR. GUSTAFSON: Objection. Question requires her to speculate as to what other people understood.

MR. GOTTLIEB: You can answer the question.

THE WITNESS: Would you repeat it?

BY MR. GOTTLIEB:

Q. Yeah. To your knowledge, did other people at Lorillard have an understanding that nicotine was related to impact?

A. I have no idea what they understood. And I'm sure I would disagree with some of them, regardless.

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(EXHIBIT NUMBER 5 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. We've marked as Exhibit 5, another one-page document, also dated May 5th, 1976, from the "Research and Development Project Request," and the project name was "Nicotine - Addition". The principal project objectives states as follows: (Reading)

> The principal objective of this project is to develop methods of adding nicotine to tobacco in the most economical manner to produce a cigarette with impact which lasts throughout the smoking of the cigarette.

And, again, at the bottom of this page, Ms. Ireland, you are indicated as the project leader.

Do you recall making this project proposal?

A. Not specifically, but, you know, we made many proposals. It was just like the other one.

Q. How is it that you would be indicated as the project leader?

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A. I was the manager of the section. Anything that my group was involved in, I necessarily was made aware of progress and what was going on, and if -- if it was even practical or -- you know, I was just the manager. And, as such, my time would be spent reading their reports or working with them.

Q. The names of the other group members, as in the previous document, are Larson, Morgan, Skladanowski and Routh.

A. Uh-huh.

Q. Would you agree that one or more of those people made this proposal?

A. Right. Probably.

Q. Would they have been able to make this proposal without your knowledge?

A. Sure.

Q. And they could put down your name as the group leader and you would have no idea they were even making the proposal?

A. Well, I'd know it when I read it. I mean, we'd discuss things from time to time, but, you know, they could certainly always make a proposal. They were free to make a proposal to do anything they wanted to.

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Q. When we're talking about making a proposal, who would they be making a proposal to? Or who would get the proposal?
A. Obviously, I would get it and it would be copied to management at a higher level.
Q. Who would have to decide whether or not the proposal would be put into effect and the project carried out?
A. It depends on what level of interest there was. If there was no interest, phffft. If there was some interest, then it would be put into the works.
Q. Well, for the two proposals that I've just shown you, do you know who would have had to determine whether or not those projects would go ahead?
A. Again, I don't know what level. It would have gone from me to Dr. Minnemeyer, to Dr. Schultz, to Dr. Spears. You know. And if there was any interest from any of those parts, or -- or maybe even some of the other departments, they would have said, "Yeah, let's go ahead and" -- or, "Let's forget about this."
Q. Well, these two proposals, did they get past your desk? Did they move forward to

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Dr. Schultz?
A. Always. I don't know whether they went to Dr. Schultz, but they always went to my -- my immediate superior.
Q. To Dr. Minnemeyer?
A. Yeah, if that's who it was at the time. I think that's who it was.
Q. So you didn't look at this and say: No, this isn't something we want to do; you would have looked at this and said: Okay, that's a proposal, let me pass it on to my superior?
A. I would always encourage them to do anything that they felt like doing. And then we would reach a consensus as to whether or not it was -- we felt it was worthwhile or, indeed, if we had time to do that.
Q. Well, do you have any recollection as to whether or not you reached a consensus -- among your group; I'm not talking about the higher-ups. But, among your group, did you reach a consensus as to whether the nicotine addition project should go forward?
A. I'm sure we thought it was a good idea.
Q. And the same thing for the nicotine

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delivery project?
A. Probably.
Q. Do you know whether any part of this proposed project was actually carried out? For example -- I'm talking about the nicotine addition project. One part involves a literature search; do you know if that was carried out?
A. Sometimes we were a little lax on the literature searches. We may have; I don't specifically recall on this one that we did a literature search, no.
Q. Do you recall whether any other parts of this project were carried out?
A. Not as is -- is specifically written, no, I don't recall.
Q. So when it says, "Addition to various components of blend, in other words, puffed, RL, burley," you don't know if that was done by Lorillard?
A. Not specifically under this project. And if it doesn't have a number, it may very well mean that it was never approved as a project.
Q. But the same tests or experiments may have been carried out under a different

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project?
A. Possibly.
MR. GUSTAFSON: Can we take just a three-minute break?
MR. GOTTLIEB: Okay.
VIDEOGRAPHER: We're going off the record at 10:22 a.m.
(RECESS TAKEN FROM 10:22 A.M. TO 10:34 A.M.)
VIDEOGRAPHER: We're going back on the record at 11:34 a.m.
MR. GUSTAFSON: I think it's 10:34 a.m.
VIDEOGRAPHER: Excuse me. 10:34 a.m.
BY MR. GOTTLIEB:
Q. Ms. Ireland, are you familiar with the concept of air dilution filtration?
A. I guess, familiar with it, yeah.
Q. Is that an area in which you were involved while you were working at Lorillard?
A. No.
Q. Let me show you a document we can mark as Exhibit 6.
(EXHIBIT NUMBER 6 WAS MARKED FOR IDENTIFICATION)
BY MR. GOTTLIEB:

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Q. From M.A. Skladanowski to Ms. Ireland, the subject, "Effect of Air Dilution Filtration on Nicotine Delivery to the Mainstream Smoke". And it states: (Reading)

> According to V. Norman, an air dilution filter (open tube and perforated paper) is less effective in removing nicotine and menthol than in removing dried tar.

Do you recall receiving this memorandum?

A. Very vaguely in a -- obviously I received it, but I don't have any recall as to -- other than reading it now.

Q. Well, did you receive a number of memorandums in the 1970s and perhaps 1980s on the general subject of filtration?

A. Probably. But I don't know for sure.

Q. Well, my question to you is, since your main field was as a chemist --

A. Right.

Q. -- do you know why you would have received a memorandum regarding air dilution filtration?

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A. Well, as a chemist and a scientist, we were interested in finding out what happened.

Q. Was one of the areas that you were interested in finding out whether particular types of filters were more effective at filtering tar as opposed to nicotine?

A. I'm sure it must have been.

Q. Do you know why you would be interested in that particular area?

A. General interest.

Q. Would it have anything to do with the nicotine augmentation project?

A. I really don't know. Possibly.

Q. Did you do any research in the area of filtration?

A. Not really, no.

Q. Did you supervise research in the area of filtration?

A. No. That's not our area really.

Q. Was -- is it Dr. Skladanowski or Mr.?

A. Ms.

Q. Ms. Well, was Ms. Skladanowski sending you this memo as a memo to a supervisor?

A. Right.

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Q. So this was an area in which you were supervising her work?

A. Right.

Q. The last page of the memo --

A. Uh-huh.

Q. -- it states: (Reading)

> The smoking data for the air dilution filters in this study is in agreement with that of Norman. A 46 percent removal of corrected particulate matter resulted in only an 18 percent removal of nicotine in the total air dilution filter.

Does this mean that you replicated -- by "you," I mean Lorillard, replicated the study done by Norman and found that air dilution filters were more effective at removing tar than at removing nicotine?

MR. GUSTAFSON: I'm going to object. Sue, if you need an opportunity to review the document, please review the entire thing. Review it carefully, if you need to do that to understand his question and be able to respond.

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THE WITNESS: Okay. You know, this was a proposal, as well as I remember, to duplicate work that had been done earlier. And apparently some of the results were this modification in tar and nicotine ratio, but there are also other modifications in the product. So, you know, I don't know what the conclusion would be from this comment here in the last paragraph.

BY MR. GOTTLIEB:

Q. Well, I'm just trying to understand it. I'm not a scientist.

A. Right.

Q. And does this basically mean that Lorillard conducted a study using, I guess, it's own experimental cigarettes and, in its study, it found that use of air dilution filters would remove a greater percentage of tar than it would remove nicotine?

MR. GUSTAFSON: I object. It mischaracterizes the document. I think this document refers to total air dilution filters, not merely just air dilution.

MR. GOTTLIEB: You can answer the question.

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THE WITNESS: Would you restate the question, please.

BY MR. GOTTLIEB:

Q. Well, does this document indicate that the air dilution filters used in this experiment were more effective in removing tar than in removing nicotine?

A. That's what it says.

Q. Do you know whether this type of filter was ever used by Lorillard in any of its commercial products?

A. I do not know.

Q. Do you know whether a total air dilution filter was ever used by Lorillard in any of its commercial products?

A. I don't know what you mean by total air dilution cigarette.

Q. What is an air dilution filter?

A. It's one that has holes in it.

Q. Do you know whether Lorillard uses air dilution filters in any of its products?

A. I don't know right now; but, at one time, they did use air diluted filters.

Q. Did it use them during the 1970s/1980s?

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A. I don't know when that was -- I don't know.
Q. You said "at one time". Do you have an idea during what time period Lorillard used air dilution filters?
A. We were -- they were using air dilution filters when I left. I do not know when they started using them or if they still are.
Q. Do you know whether they were using them in the 1980s?
A. I don't have that information. That's the product development area.
Q. Do you know why Lorillard was using air dilution filters?
A. I was never told.
Q. Did you have an understanding that the reason Lorillard was using them is that because they were more effective in removing tar than in removing nicotine?
A. No.
Q. Was that one of the considerations, one of the factors, why Lorillard used air dilution filters?
A. I don't --
MR. GUSTAFSON: Objection.
BY MR. GOTTLIEB:

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Q. To your knowledge.

MR. GUSTAFSON: It requires her to speculate as to --

THE WITNESS: It's not my area. I don't know.

MR. GUSTAFSON: -- why it was done.

BY MR. GOTTLIEB:

Q. Did you ever have any conversations with people outside of your particular department regarding the use of air dilution filters? In other words, I would say people in management or people in sales or any other non- -- I mean -- strike that.

People from any department other than the department that you were the manager of.

A. Are you asking if I ever talked to anybody about air dilution?

Q. Yes.

A. Period? With regard to what?

Q. Well, with regard to its efficiency at removing tar and its efficiency at removing nicotine?

A. No.

Q. Is that a subject that you had

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conversations with anybody about?
A. Not to my knowledge. Not that I remember.
Q. We were speaking about pH a little bit earlier. Did Lorillard test the pH of competitors' products?
A. Not in our section. Not that I know of.
Q. Let me show you a document dated June 28th, 1976. We can mark this as Exhibit Number 7.
A. Must have.
Q. It's a one-page document --
A. Uh-huh.
Q. -- from Ms. Ireland to Dr. Minnemeyer. The subject is "pH of Particulate Phase of Selected Cigarettes".
(EXHIBIT NUMBER 7 WAS MARKED FOR IDENTIFICATION)
BY MR. GOTTLIEB:
Q. Does this refresh your recollection as to whether or not Lorillard was measuring the pH of its competitors' cigarettes?
A. It would appear so. But, again, the work was done outside my department.
Q. If the work was done outside your department, why were you writing the memo to Dr. Minnemeyer?

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A. Because we were interested and he was interested.

Q. So this is something that you asked others to report to you on? Somebody else is doing this measurement?

A. Someone else was doing the measurement, outside of my group, outside of my section.

Q. And you asked -- you asked people from that group to report to you on their findings; is that correct?

A. I apparently asked for the -- for the tests to be done. They did it and reported to me.

Q. And you reported those results to Dr. Minnemeyer?

A. Right.

Q. Do you have any recollection as to whether those tests were done on an ongoing basis?

A. No, I don't recall.

Q. In other words, we have, right now, a document showing that such tests took place, let's say, sometime in June of 1976.

A. Correct.

Q. Do you know whether such tests also occurred subsequent to that time?

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A. I do not.
Q. Prior to that time?
A. I do not.
Interesting.
Q. The smoke pH varied in this chart from 6.3 for Winston Lights --
A. Uh-huh.
Q. -- to 8.05 for Nows.
A. Uh-huh.
Q. Do you have an understanding as to how a variation of that magnitude would affect the impact of the smoke on a smoker?
A. (Witness shakes head.)
No. Sorry.
Q. Do you have any understanding at all regarding why Dr. Minnemeyer was interested in smoke pH?
A. I don't know what Dr. Minnemeyer's interests were, other than interested.
Q. Well, why were you interested in smoke pH?
A. Why not? I mean, if you read in the literature and they talk about pH in nicotine, apparently we were trying to find a correlation. It's difficult to remember exactly our

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interests, but that's a supposition.

Q. Well, would it be fair to say that your interest in smoke pH was because you believed that it might have an effect on the impact of nicotine on smokers?

MR. GUSTAFSON: I'm going to object. I think that totally mischaracterizes Ms. Ireland's testimony. There's no foundation for that at all.

MR. GOTTLIEB: You can answer the question.

THE WITNESS: Would you repeat the question?

MR. GOTTLIEB: Could you read it back, please.

(WHEREUPON, THE QUESTION WAS READ BACK BY THE COURT REPORTER AS FOLLOWS:

Well, would it be fair to say that your interest in smoke pH was because you believed that it might have an effect on the impact of nicotine on smokers?)

THE WITNESS: No.

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BY MR. GOTTLIEB:

Q. Did you have -- was there a theory at that time among Lorillard researchers that smoke pH might be related to the impact of nicotine on smokers?

A. Not mine.

Q. Not your theory?

A. Not my theory.

Q. But such a theory was --

A. I don't know.

Q. -- in --

A. I don't know what other people thought.

Q. Well, you do know that Lorillard measured smoke pH over a number of years and, as a matter of fact, still measures it today, as far as you know?

A. I don't know.

MR. GUSTAFSON: I'm going to object. I think her testimony was that they attempted to measure it but never came to a reliable method of measuring smoke pH. I think that -- your question mischaracterizes her prior testimony.

THE WITNESS: Uh-huh.

MR. GOTTLIEB: Let me rephrase that.

BY MR. GOTTLIEB:

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Q. You do believe that Lorillard had made attempts over a number of years to measure smoke pH; is that correct?

A. This is not smoke pH.

Q. Okay. I guess I was confused when it said "smoke pH".

A. Well, it's not smoke pH.

Q. Could you explain to me what it is.

A. There's a difference between smoke and condensate.

Q. Okay. Could you explain that.

A. Condensate is the particulate matter collected on pads, which is subsequently put in an aqueous medium.

Q. So this would be the pH of the condensate that was gathered on a Cambridge filter?

A. As far as I know.

Q. But it would not be the actual smoke that is in a smoker's mouth?

A. If it is, we'll give him an award -- an award, because he -- he needs to be published as a Nobel or something, in my opinion. It would be quite a feat.

Q. Okay. So what you were measuring

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back in 1976 was the pH of the condensate?

A. Correct.

Q. And --

A. To the best of my knowledge. I don't -- I don't --

Q. I understand.

A. Okay.

Q. And do you have an understanding as to why Lorillard was interested in measuring the pH of the condensate in competitors' products?

MR. GUSTAFSON: Object. It requires her to speculate beyond what she herself understood. It requires speculation I think is improper. But you can tell him what you understood.

THE WITNESS: I think anyone always wants to know everything about their product and their competitors' product that they can find out, especially related to market share.

BY MR. GOTTLIEB:

Q. Do you think that pH might be related to market share?

A. I don't -- it's difficult to tell. I don't have a clue. I don't know.

Q. Well, what I'm trying to understand

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is, measurements were made of pH over a number of years. And you were aware of those measurements; is that correct?

MR. GUSTAFSON: Again, I'm going to object. It mischaracterizes her testimony. There were attempts made to measure pH, and apparently this was a measurement of the pH in the condensate ...

THE WITNESS: Uh-huh.

There were attempts made to measure pH of the vapor phase. I don't know if there was more than a trial run, which was unsuccessful. And I don't know that anybody ever went back and did it anymore.

BY MR. GOTTLIEB:

Q. Okay. But Lorillard made attempts to measure the condensate pH of its products and its competitors' products over a number of years; is that correct?

A. I don't know "over a number of years".

Q. Well, do you have any idea as to why Lorillard wanted to know about the pH in the condensate?

A. No, not really. It's something that we thought we might get a clue about. But, you

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know, you never know whether you find out anything or not.

Q. Let me show you a document. We'll mark it as Exhibit Number 8. It's dated June 11th, 1976. It's also from Ms. Ireland to Dr. Minnemeyer. The subject is the "Nicotine Augmentation Project".

(EXHIBIT NUMBER 8 WAS MARKED FOR IDENTIFICATION)

(DOCUMENT HANDED TO WITNESS FOR REVIEW)

BY MR. GOTTLIEB:

Q. First paragraph reads as follows: (Reading)

> As the first reports are received on the above project, it would appear that now is a good time to seek more definite direction with regard to individual projects. Larson and Morgan have added nicotine to tobacco and found that both the free form of the salt -- [let me restate that again] -- found that both the "free" form and the salt are

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apparently stable.

First of all, does this refresh your recollection as to the types of experiments that were being done in 1976 regarding the addition of nicotine to experimental cigarettes?

A. This refreshes my memory a little bit; but this memo has some discrepancies.

Q. What discrepancies have you noted?

A. Well, we didn't add it to tobacco. If this is the project that I'm aware of. And we had no measure of free; that was a supposition.

Q. Well, is this a memo that you wrote?

A. Right.

Q. Can you tell me why you would have stated here that "Larson and Morgan have added nicotine to tobacco" when in fact they didn't do that?

A. Tobacco is generally -- we refer to tobacco as both reconstituted leaf and tobacco. And if this is the individual experiment, it was added to the reconstituted leaf.

Q. Okay.

A. Which we think of as tobacco. It's a technicality, really.

Q. So you are clarifying that the word

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"tobacco" there should actually be referring to reconstituted tobacco?

A. Correct.

Q. Okay.

A. I'm assuming this was the experiment that was done then. I don't recall, 20 years ago.

Q. It's a long time.

A. Yeah.

Q. And it says: (Reading)

-- and found that both the "free" form and the salt are apparently stable.

So you were -- would it be fair to say that at that time you were in some way measuring the free form of nicotine?

A. No. We didn't.

Q. Well, how could you say that the free form was stable, if you didn't -- if you weren't able to measure the free form?

A. Well, you don't necessarily have to be absolute. If you put something on a product or in a material, and then you can measure it by conventional methods, then you make certain assumptions that the material that you added is still there.

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The second indication that the free form might be there is because of the harshness in the burley; which may or may not have anything to do with free, in my opinion.

Q. But certainly in 1976, when you were writing this, you were of the opinion that you were able to add free nicotine --

A. Right.

Q. -- to the RL?

A. Right.

Q. That it would stay in the RL, it was stable?

A. But not as -- I never did believe it really was free, as the quotes indicate.

Q. Did you indicate to Dr. Minnemeyer that you didn't think it was really free in nicotine?

A. I think that's an understanding. Because he knew we couldn't measure it -- we knew we couldn't measure it.

Q. In the second to last paragraph, which states: (Reading)

> As requested, ammonia was added to a small amount of Kent Golden Light tobacco.

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Do you recall whether that was done?
A. Well, it says we did.
Q. Do you recall why it was done?
A. Probably to try to see if we were changing pH. If ammonia would change the pH. You know.
Q. What was the --
A. Ammonia is a basic --
Q. The idea was that by adding ammonia you would raise the pH?
A. You would think so.
Q. Did it happen?
A. I don't know. I don't know if we ever tried to measure the pH of the product. Probably didn't have enough to do it. PH of the condensate, not the vapor phase. As it says, they were not analyzed.
Q. If you look at the last page, last paragraph.
A. Uh-huh.
Q. It says: (Reading)

> I would also like to include at this time a formal research proposal for the development of an assay procedure for the

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determination of free nicotine in tobacco and tobacco smoke. There appears to be a relation between pH, impact, taste and free nicotine.

First of all, did that formal proposal ever get approved?

A. I don't know if I ever even formally did it. I don't know -- I don't remember if I made a formal research proposal based on that paragraph. A certain amount of dreaming. I was a dreamer.

Q. Okay. But, at that point in time, you believe it would be possible to measure free nicotine; is that correct?

A. I had hoped so. No one else had done it, to my knowledge.

Q. And it was something that you felt that Lorillard would be interested in -- in doing?

MR. GUSTAFSON: I'm going to object. You keep on using the term "Lorillard". I mean, she can tell you what she knows, but it requires gross speculation for her to say what Lorillard,

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as some corporate entity, thought or understood or wanted to do.

MR. GOTTLIEB: You can answer the question.

THE WITNESS: My thought would be that it would be of interest, and nobody else had done it. And that's what basic research is about.

BY MR. GOTTLIEB:

Q. Why did you think the company would be interested in the ability to measure free nicotine?

MR. GUSTAFSON: Object. I think that mischaracterizes her testimony. She said that she was interested in it, not necessarily the company.

MR. GOTTLIEB: You can answer the question.

THE WITNESS: Why not? It's there.

BY MR. GOTTLIEB:

Q. It's part of the --

A. It's a part of the product. Why not find out as much about it as you can, that nobody else has done before?

Q. Well, the following sentence says:

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(Reading)

There appears to be a relation between pH, impact, taste and free nicotine.

Is that a statement that you would agree with today?

A. "There appears." I have no proof. Would I agree? I'd have to have some measure of -- of that information before I made an evaluation. You know?

Q. Well, when it says "it appears," in other words that's an hypothesis or what you believe to be, but you haven't proven it to be so yet?

A. Right.

Q. Would you say that's still true today, that you believe today there's a relationship between pH, impact, taste and free nicotine?

A. Still have no proof, have no idea.

Q. But it's still your belief?

A. I don't know.

MR. GUSTAFSON: Objection. That mischaracterizes her testimony. It's a hypothesis. She's never once testified that it

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is her belief.

THE WITNESS: I don't know.

BY MR. GOTTLIEB:

Q. Or it is something that you would hypothesize today?

A. I don't know. I don't hypothesize when I have no facts in -- at all to deal with.

Q. Did you have facts to deal with in 1976?

A. No. But it's still things that you think about. But I have no facts.

Q. But you had a basis for making this hypothesis back in 1976; is that correct?

A. When you talk of impact and free nicotine and that sort of thing, you -- you start thinking: Well, could it be? Is there a possibility? There may be a possibility.

We were never able to measure that. And whether I believe that there is or not, I still don't know. I don't know if there is a relationship between pH and impact, much less nicotine.

Q. Could you tell me what was the basis of your hypothesis back in 1976?

A. Just sort of feelings. No, I have no

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facts.

Q. Was there research done by other scientists in that area?

A. As we have stated earlier, there had been a method for measuring pH, period. We were never able to duplicate those results, much less find any correlation between the pH and any other component in the product. No correlation at all, that I know of, between pH and anything else.

Q. Do you know what the pH was in, say, Kent cigarettes back in 1976?

A. No.

Q. Do you know whether the pH went up or down for Kent cigarettes for any time since 1976?

A. No.

MR. GUSTAFSON: The pH in the vapor phase or --

MR. GOTTLIEB: I'm talking about the pH in the condensate.

THE WITNESS: No, I don't know. We were never able to measure the vapor phase, or anybody else that I know of, so I certainly couldn't testify to that.

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BY MR. GOTTLIEB:

Q. But as to the condensate, was that something which was measured, to your knowledge?

A. I don't -- I don't know. That was not -- I didn't do that. Our area didn't do that.

Q. Was free nicotine added to -- strike that.

You stated that free nicotine was added to reconstituted leaf; is that correct?

A. No.

Q. In experiments.

A. If I said that, that's not what I meant.

Q. Okay. Let me show you a document. We'll mark it as Exhibit 9. It's dated June 28th, 1976.

(EXHIBIT NUMBER 9 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. It's from J. P. Morgan and T. Larson to Ms. Ireland. The subject is "Smoke pH".

First paragraph begins: (Reading)

> In our work on the NAP, we have followed up our cigarette samples with puff by puff smoke pH and smoke pH of complete cigarette

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samples.

First of all, does NAP refer to the nicotine augmentation program?

A. Yes.

Q. Secondly when it says "Subject: Smoke pH," is it your understanding that we're actually talking about condensate pH?

A. Yes.

Q. Do you know why researchers at Lorillard would call it "smoke pH" rather than "condensate pH"? Is that something which you ever discussed?

A. No distinction. If you know what's going on.

Q. Second paragraph reads: (Reading)

> The pH measurements were made in conjunction with the primary objective of adding nicotine to cigarette tobacco, not as part of a smoke pH study.

Do you recall that the primary objective was to add nicotine to experimental cigarettes?

A. My recollection is that we were trying to

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determine if the pH delivery was consistent from the first puff to the last.

Q. In cigarettes that had added nicotine"?

A. No, just period.

Q. In all cigarettes?

A. Period. Yes.

Q. The last paragraph on the first page says: (Reading)

> Samples A, B and C, were made with reconstituted leaf tobacco. Free nicotine was added to samples B and C.

Does that refresh your recollection as to whether Lorillard added free nicotine to any of its experimental cigarettes?

A. That was -- again, if you know what's going on, you know probably what happened. The nicotine was added to the slurry, which was subsequently made into reconstituted leaf. But it was not added, to the best of my knowledge, directly to some reconstituted leaf we had left. Okay?

Q. How would free nicotine be added to the slurry? I'm not talking about regular

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nicotine, we're talking free nicotine.

A. It was added as a solution, as well as I remember.

Q. The last line on that first page says: (Reading)

> From a review of the data, it was seen that the added free nicotine made the smoke pH significantly less acidic.

Does that mean that the pH level rose?

A. That's what it would appear to be, yes.

Q. Do you know whether Lorillard made any attempt to raise the pH level in any of its commercial products during the time that you were with Lorillard?

A. No.

Q. No, it didn't, or no, you don't know?

A. I don't know.

Q. Okay.

A. I don't think so.

MR. GOTTLIEB: Please mark as Exhibit 10 a document dated June 8th, 1976.

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It's a research report submitted by T. M. Larson and J. P. Morgan. Ms. Ireland is copied on it. And the title is "Application of Free Nicotine to Cigarette Tobacco and the Delivery of That Nicotine in the Cigarette Smoke".

(EXHIBIT NUMBER 10 WAS MARKED FOR IDENTIFICATION)

(WITNESS REVIEWS DOCUMENT)

BY MR. GOTTLIEB:

Q. The summary begins as follows: (Reading)

> Nicotine was applied as free nicotine and nicotine tartrate to different tobaccos for the purpose of increasing the nicotine to tar ratio in the cigarette smoke.

To the best of your knowledge, Ms. Ireland, are we once again talking about adding free nicotine to the slurry? Or is this talking about adding free nicotine to the tobacco itself?

A. I'm not sure.

MR. GUSTAFSON: Sue, if you need to look at the entire document -- I mean, you put a

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document in front of her that's a lengthy document --

MR. GOTTLIEB: If she needs some time, she should by all means take the time to peruse the document.

MR. GUSTAFSON: The document was authored 20 years ago; it wasn't even authored by her. If you need the time to respond to the question, please do so.

THE WITNESS: Even after I read it, I don't know. If I had total recall, I would be pressing.

MR. GOTTLIEB: Nobody wishes more than I that people I speak to have total recall.

THE WITNESS: Including yourself.

MR. GUSTAFSON: All of us.

THE WITNESS: I do not recall specifically, even after reading this summary, whether or not this was from the nicotine added to the slurry or whether there were very small -- well, I can tell you on the next page. Just a minute.

BY MR. GOTTLIEB:

Q. The top of next page.

A. It said it was sprayed on cut tobacco.

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Okay.

Q. Does that refresh your recollection as to whether or not Lorillard sprayed free nicotine on cut tobacco on a number of occasions?

A. This was one, single experiment.

Q. I understand that. Do you know whether it was done at other times as well?

A. I doubt it. No, I do not know.

And you realize that the amount of tobacco sprayed was a hundred grams?

MR. GUSTAFSON: Sue, just respond to his question. Let him ask the questions and we'll get done faster.

THE WITNESS: Okay.

BY MR. GOTTLIEB:

Q. Was the import of your statement that these were small batches?

A. Extremely small.

Q. For experimental purposes, not for commercial purposes, correct?

A. Oh, absolutely.

Q. Going back to that first sentence in the first page, it says the purpose of applying the free nicotine and nicotine tartrate was to

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increase the nicotine to tar ratio in cigarette smoke.

Do you know why Lorillard was interested in increasing the nicotine to tar ratio in cigarette smoke?

MR. GUSTAFSON: Objection. Calls for speculation.

MR. GOTTLIEB: You can answer.

THE WITNESS: I would imagine, to see how it affected the satisfaction of the consumer.

BY MR. GOTTLIEB:

Q. Was the idea that, if you could increase the tar to -- sorry, if you could increase the nicotine to tar ratio, the theory was that smokers would be more satisfied?

A. That was a theory; but, apparently, it backfired.

Q. What happened?

A. Well, we never did do anything with it, so we must have been wrong.

VIDEOGRAPHER: Mr. Gottlieb, we have five minutes left on the videotape.

BY MR. GOTTLIEB:

Q. Do you know what the tar to nicotine

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ratio in Lorillard cigarettes, let's say full flavor cigarettes, were in 1976?

MR. GUSTAFSON: Objection. Question is vague and ambiguous.

THE WITNESS: No.

BY MR. GOTTLIEB:

Q. Do you know what the tar to nicotine ratio was in relation to Lorillard cigarettes at any point in time?

A. No.

Q. If you take a look at the third page.

A. Page 3 or the third page?

Q. Page 3.

A. Page 3?

Q. Page 3.

A. Uh-huh.

Q. In the section on "Comments," I'd like to just give you a minute to read that section to yourself.

(WITNESS REVIEWS DOCUMENT)

A. Okay.

Q. The comment talks in part about the addition of small amounts of free nicotine and suggests that R.J. Reynolds may be doing that

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with Vantage. Did you see that?
A. Uh-huh.
Q. Is that something which Lorillard did some research on? Were you trying to determine whether other companies were adding free nicotine to their cigarettes?
A. We couldn't measure free nicotine. No.
Q. Well, was this a hypothesis that Lorillard researchers had, in other words, that other companies were adding free nicotine to their cigarettes?
MR. GUSTAFSON: I'm going to object to the extent it requires -- to the extent you're asking her --
THE WITNESS: No, I didn't --
MR. GUSTAFSON: -- what other people knew.
Let me finish my objections, and then you can respond.
THE WITNESS: Okay. Sorry.
BY MR. GOTTLIEB:
Q. Is that something that you talked about with anybody in the research department, whether or not other tobacco companies were adding free nicotine to their cigarettes?

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A. We may have discussed it, but you suppose a lot of things.

Q. It's not something that you --

A. No foundation for it, just talk.

Q. Well, do you remember any specific conversations on that topic?

A. No.

Q. Do you remember who you might have spoken to on that topic?

A. No.

Q. The bottom of that page, under "suggestions for further work" states: (Reading)

> Determine what level of free nicotine is necessary to provide a "popular" impact. [The word popular is in quotation marks.]

Do you know whether that further work was ever undertaken at Lorillard?

A. Not in my section, that I know of.

Q. Do you know whether it was undertaken by any other section?

A. No.

Q. Do you know whether Lorillard had

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outside consultants who did research in that area?

A. I don't know.

MR. GOTTLIEB: Why don't we go off the record.

VIDEOGRAPHER: We're going off the record at 11:20 a.m.

(RECESS TAKEN FROM 11:20 A.M. TO 11:32 A.M.)

VIDEOGRAPHER: This is tape 2 of the videotape deposition of Sue Ireland. We're going back on the record at 11:32 a.m.

BY MR. GOTTLIEB:

Q. Ms. Ireland, who was J. R. Reid?

A. J. R. Reid was a -- or is, and was, he's still living, a chemist in the -- what -- the organic section of the research.

Q. Of Lorillard?

A. Of Lorillard.

Q. And he was there in 1976?

A. I don't know the date.

Q. Let me show you a document.

A. You know, if you say so. I mean, he must have been.

Q. I've got a document that seems to say so.

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MR. GUSTAFSON: Quite to the contrary. You should not believe -- you should not believe anything he says, unless he proves it.

THE WITNESS: Okay. This document indicates that he --

MR. GOTTLIEB: You wound me, sir.

MR. GUSTAFSON: Yeah, right.

THE WITNESS: You'll recover. Okay. Yes.

MR. GOTTLIEB: If this was a number of years ago, I'd challenge you to a dual after a statement of that sort. But let's continue in a more civilized fashion.

THE WITNESS: I thought that was civilized. I rather enjoyed it, levity.

BY MR. GOTTLIEB:

Q. This document is dated March 9th, 1976. It's from J. R. Reid to Dr. Minnemeyer. The subject is "Concerning Literature References on Nicotine Application and Source". The document begins as follows: (Reading)

It is recognized in the tobacco industry that it is desirable to maintain the

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nicotine content of tobacco at a constant level in order to provide a satisfactory smoking product.

And my question is: Would you agree with that statement?

A. I don't know what he means by "constant level".

Q. Do you have an understanding of what that might mean?

A. It could mean several things.

Q. What are the possibilities?

A. It could mean the level throughout the cigarette, from first puff to last puff. It could mean from one cigarette to the next. And I don't know that I necessarily agree, even so.

Q. Well, let's take the two possible definitions. Do you think it's important to maintain a constant nicotine level throughout a given cigarette from one puff to the last?

MR. GUSTAFSON: Objection. Important in what respect, Lou? The question is vague and ambiguous as phrased.

BY MR. GOTTLIEB:

Q. Important in order to provide a

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satisfactory smoking product.

A. That's what he thinks. I don't know, and I don't know that I agree.

Q. Well, do you think it's important to provide constant -- or to maintain a constant level of nicotine in cigarettes, from one cigarette to the next, in order to provide a satisfactory smoking product?

A. No. Not really.

Q. So -- okay.

Why is that?

A. I don't think nicotine has anything to do with satisfaction. That's the way I feel about it.

Q. And is that an opinion that, as far as you know, is shared by many people within the tobacco industry?

MR. GUSTAFSON: Objection. That requires gross speculation on her part as to what other people think.

MR. GOTTLIEB: Counsel --

MR. GUSTAFSON: I don't know how she can possibly do that, Lou. It's an unfair question; you know it as well as I do.

MR. GOTTLIEB: You keep on objecting

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to questions on the grounds of speculation, and the questions are all to her knowledge. She may have had conversations, she may have read memos; therefore, she may know the answer. If she doesn't know the answer, she is perfectly willing and able to tell me that she doesn't know the answer.

THE WITNESS: Would you restate the question, please.

MR. GOTTLIEB: Sure.

BY MR. GOTTLIEB:

Q. Do you have an understanding as to whether other people at Lorillard agreed with you that nicotine is not really important for smoker's satisfaction?

A. I do not know. I don't remember ever specifically discussing it with anyone.

MR. GUSTAFSON: Do you want to mark that as an exhibit, Lou, or not?

MR. GOTTLIEB: Yeah. We should mark that as Exhibit 11.

(EXHIBIT NUMBER 11 WAS MARKED FOR IDENTIFICATION)

MR. GOTTLIEB: Off the record.

(DISCUSSION OFF THE RECORD)

VIDEOGRAPHER: Do you need to go off

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the record?

MR. GOTTLIEB: Not yet.

BY MR. GOTTLIEB:

Q. Do you know whether Lorillard experimented by adding ammonium hydroxide or ammonium carbonate to tobacco in experimental cigarettes?

A. There was one time we tried that.

Q. Let me show you a document dated December 10th, 1976. We'll mark it as Exhibit 12. It's from W. E. Routh to Ms. Ireland. Subject is "True 85 Tobacco Treatment With Ammonia and Nicotine".

(EXHIBIT NUMBER 12 WAS MARKED FOR IDENTIFICATION)

MR. GOTTLIEB: I'll give you a chance to take a look at the document.

(WITNESS REVIEWS DOCUMENT)

THE WITNESS: Uh-huh.

BY MR. GOTTLIEB:

Q. Does this refresh your recollection as to whether or not Lorillard conducted that type of experiment?

A. They did.

Q. And you said it happened on one occasion. Is this the one occasion you had in

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mind?
A. For this particular experiment it is.
Q. Well, were there other experiments involving the use of ammonium carbonate or ammonium hydroxide?
A. Not that I know of.
Q. Do you know whether ammonium hydroxide was ever used in a commercial cigarette by Lorillard?
A. No, it was not. To my knowledge.
Q. Would you -- would you know about it if Lorillard used ammonium hydroxide, let's say, during the period of your employment?
MR. GUSTAFSON: Objection. Requires speculation.
THE WITNESS: Not necessarily.
BY MR. GOTTLIEB:
Q. Same question as to ammonium carbonate: Was it used in a commercial product, to your knowledge?
A. No, it was not.
Q. Was any ammonia compound used in a commercial product by Lorillard --
A. Not to my --
Q. -- during the course of your

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employment?

A. Not to my knowledge.

Q. Including in RL?

A. Not to my knowledge.

Q. Do you know whether reconstituted leaf used by Lorillard has ever contained an ammonia compound?

A. Not to my knowledge.

Q. On the second page, it states that: (Reading)

> All seven samples were given to Terry Jessup for oral smoking. The results are shown on table number 3. The addition of ammonium hydroxide or ammonium carbonate to tobacco, with or without nicotine at 0.5 percent level, decreased the overall acceptability to the smoker. The taste amplitude and impact of all treated cigarettes were as high or higher than the control.

What does that mean, "the taste

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amplitude and impact were as high or higher than the control"?

MR. GUSTAFSON: Objection. Requires her to speculate as to what the author of the document meant --

MR. GOTTLIEB: To your understanding.

THE WITNESS: To my impression, is it, if you put a little bit of pepper on something, it's good, and if you put a whole lot more, and it is not. That is sort of my impression of amplitude and impact. It's ...

Q. Well, is it your understanding that the reason that the taste amplitude and impact were higher is because of the ammonia additives?

A. If that's the only thing that was added, yes.

Q. And would that be related to the pH? In other words, would the ammonia affect the pH? Is that how you think it works?

A. That would be a reasonable supposition; but, with no measurements, I don't know.

Q. Let me show you a document we'll mark as Exhibit 13. It's dated November 4th, 1976. It's a report submitted by M. A.

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Skladanowski. The title is "Air Dilution Filtration of Cigarette Smoke Without a Cellulose Acetate Plug". And Ms. Ireland was copied on this report.

(EXHIBIT NUMBER 13 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. We spoke a little earlier about total air dilution cigarettes. Do you know whether any total air dilution cigarette was ever made -- was ever sold commercially? By anyone; not only Lorillard, by anyone.

A. I don't know what a "total air dilution cigarette" would be.

Q. Well, would it be a cigarette that does not have a cellulose acetate plug?

MR. GUSTAFSON: Objection. She just said she doesn't know what it would be.

THE WITNESS: I don't know.

BY MR. GOTTLIEB:

Q. The first paragraph on the second page of this document states: (Reading)

> Previous studies have shown that a True 85 cigarette filtered only by air dilution, as compared to

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the production True 85 cigarette, had higher nicotine to tar ratios, lower carbon monoxide levels, higher spoke pH, and a potentially simpler construction.

Do you know why such a cigarette would have higher smoke pH?

A. Based on reading this, it's just straight cigarette smoke. Like an old fashioned Lucky Strike from the war days.

Q. You think it's --

A. In other words --

Q. -- a completely non-filtered cigarette?

A. No filtration, is what it looks like. It's just -- right.

Q. Wouldn't -- if you take a look at the next page, would it have some sort of a filter that doesn't have any filtering material in it, just maybe a filter with some holes perforated in it?

A. That's what it looks like. I don't really know.

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Q. Well, do you know -- do you have an understanding as to why such a cigarette, with a plastic mouth piece, without any filtration material inside, would have a higher pH than a filtered cigarette?

A. I don't know.

Q. On the page with the number 2 on it, at the top, the last paragraph under "Smoke Results" states: (Reading)

> The removal of nicotine by the three air dilution filters was low compared to the removal of tar as shown in Table II.

Do you know whether Lorillard produces any cigarettes commercially in which the removal of nicotine is low compared to the removal of tar?

A. No.

MR. GUSTAFSON: Objection to the form of the question.

THE WITNESS: No, I don't know of any.

MR. GOTTLIEB: Don't know.

BY MR. GOTTLIEB:

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Q. Do you have an understanding that nicotine follows tar in terms of the amount of nicotine that you have in a cigarette?

A. I've never seen any numbers, but it would be logical to think that they would maintain a certain ratio.

Q. Do you know whether Lorillard has ever attempted to change that ratio?

MR. GUSTAFSON: In commercial cigarettes, Lou, or experimentally?

MR. GOTTLIEB: I guess you do it first experimentally and, if that works, you do it commercially.

THE WITNESS: Have they ever tried to change the ratio?

MR. GOTTLIEB: Yes.

THE WITNESS: Well, obviously these documents have indicated we have looked at those levels but -- in experimental product, but -- you know.

BY MR. GOTTLIEB:

Q. And to your knowledge, has Lorillard ever had any success in changing the tar to nicotine level ratio --

A. No.

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Q. -- in commercial products?
A. No.
Q. Do you know whether the tar to nicotine level in Lorillard products is the same for its full flavor products as its ultralight products?
A. I do not know.
Q. Did Lorillard ever extract nicotine from tobacco?
A. We -- I don't know what you mean by the definition of "extract." We did some experiments to remove nicotine, some -- some people in the group did.
Q. What percentage of nicotine was Lorillard able to remove from tobacco?
A. I don't remember.
Q. Was the removed nicotine stored in some way?
A. To my knowledge, there was never enough removed that you'd need to store it.
Q. Well, let me show you a document dated September 10th, 1976, from Ms. Ireland to Dr. Minnemeyer. And the subject is "ISNAP Progress Report." First, you know what ISNAP stands for?

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A. Not really.

Q. In the NAP part, the nicotine augmentation project?

A. I would expect it to be. But I don't know what the IS is. But anyway ...

Q. The memo begins: (Reading)

> At the meeting held on August 12, 1976, Mr. Bob Thomas indicated he was looking for equipment to do pilot plant scale extraction of nicotine from tobacco. Since that time, he has located a possible source of this equipment and hopes to have more details soon.

Do you know whether this pilot plant extraction of nicotine was ever put into effect?

A. To my knowledge, it never was.

Q. Do you know why?

A. Lack of interest? No, I don't know why.

Q. When it's talking about a pilot plant extraction project, we're talking about doing nicotine extraction on a large scale; is that correct?

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A. "Large" is relative. As well as I remember, Dr. Reid did it in a five-gallon bucket, you know, which is a pilot plant.

Q. Well, do you recall that meeting on August 12, 1976, with Bob Thomas?

A. Not really.

Q. Do you recall any meeting at which Lorillard was considering a process by which it could extract nicotine from tobacco on a scale that would be needed for commercial development of a cigarette using added nicotine?

A. My understanding of this project was exactly the opposite.

Q. Could you explain what your understanding was.

A. There's tobacco available, Rustica, which is a cheap tobacco with a high nicotine content. If we could get rid of the nicotine, we might be able to use it as a filler for tobacco.

Q. In other words, what you wanted to do was take a high nicotine product, remove some of the nicotine from that product, and use the product in commercial sales? That was the goal?

A. To get rid of the nicotine.

Q. All of it or some of it?

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A. As much as possible.

Q. Do you know what percentage nicotine is -- exists, let's say, in burley?

A. I don't remember. It has varied over the years.

Q. Depends on the crop fluctuations?

A. Depends on crop and species. Because the objective is to have product with lower levels of nicotine.

Q. You say that is the objective, to have lower levels of nicotine in the tobacco?

A. Yes.

Q. When was that objective put into effect?

A. As far as I know, it always has been -- or has been since -- since I was associated with the tobacco industry.

Q. So during that time from, let's say, 1965 through 1994, Lorillard was looking for sources of tobacco that were lower in nicotine content than the tobacco that it was currently using. Would that be a fair statement?

A. To -- my feeling is the plants themselves were developed with the idea of having a lower nicotine level.

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Q. Now, when the plants were developed -- being developed by Lorillard or by farmers?

A. Oh, no. No. Farmers in agricultural ...

Q. And they're doing that because Lorillard is telling them that they're looking for a product with lower nicotine in the tobacco --

MR. GUSTAFSON: Objection.

THE WITNESS: No.

BY MR. GOTTLIEB:

Q. -- is that correct?

MR. GUSTAFSON: There's no foundation for that -- for that question at all.

THE WITNESS: No.

BY MR. GOTTLIEB:

Q. Well, why, to your knowledge, were groups looking to decrease the nicotine in tobacco plants?

A. Why?

Q. Yes.

A. The high levels of nicotine were just harsh, or whatever else there was there, and people were getting away from that. And, as farmers -- I grew up on a farm, and you grew the

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plants that the agricultural community indicated would be more acceptable.

Q. Acceptable to the industry?

A. To the -- to the buyers of the tobacco, the leaf. Uh-huh.

Q. So, in other words, the tobacco industry, perhaps not Lorillard alone, but tobacco industry in general, was sending out the word to agricultural groups that they were interested in producing and -- and in purchasing tobacco with lower nicotine levels than the product that was generally available?

A. I don't know how that came about. Certainly Lorillard is not -- was not large enough to impact the -- the growing tobacco community.

Q. To your knowledge, did Lorillard have any agreement with people in the agricultural community to create a strain of tobacco with lower nicotine?

A. You're way out of my range. I'm, you know -- I was at a very low level. I would have no -- but I would not think so. My opinion would be no.

MR. GUSTAFSON: Sue, tell him what

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you know, and don't speculate and don't guess.

THE WITNESS: You're just out of my area of expertise. I don't know. But I do know, that over the years, from a farmer's point of view, that the tobacco that was being grown was milder and milder and milder. And we associate that with nicotine and ammonia.

BY MR. GOTTLIEB:

Q. During what period of time would you say that the tobacco growing was milder?

A. Certainly it started in the '40s.

Q. Well, it was milder in the '50s than in the '40s?

A. I would think so. I don't --

Q. Was it milder in the '60s than in the '50s?

A. I don't have any documentation.

Q. Do you know whether at any point in time it leveled off?

A. I do not know.

Q. Do you know whether at any point in time it may have risen?

A. I do not know.

Q. Do you know where I would be able to obtain that information?

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A. Pennsylvania State, I think, had an agricultural thing, but I don't -- I don't know. Pennsylvania State Laboratories.

Q. Is that a -- that's part of a college --

A. Yes.

Q. -- when you say Pennsylvania State?

A. Yes, Pennsylvania State may -- other -- I don't -- I don't really know. Or any of your agricultural based schools may have some of that information. But I -- you know, I didn't get into that stuff when I was a child. I have no idea. We did what daddy told us to.

Q. To your knowledge, does Lorillard have records showing the average nicotine content of the tobacco that it purchased over the time period that you were at Lorillard?

A. I'm sure, if they do, you have them. I don't. I don't know whether they -- I'm sure those records are retained somewhere.

Q. Have you ever seen records to that effect? Like this batch --

A. I may have seen some that said, you know -- but that was not my -- it was not my job to evaluate any of that stuff.

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Q. Did you see any records that indicated a trend that the average amount of nicotine in tobacco went up or down or stayed the same --

A. No.

Q. -- over any period of time?

A. No.

Q. So your statement about it being less nicotine, is that based upon your knowledge growing up on a farm?

A. That, and I may have read something someplace, but I don't -- I don't know the source of that information, or whether it's -- I'm not going to be hung by my thumbs by that --

Q. No, you won't.

A. -- but that's an impression, and I must have gotten it from somewhere, either reading it or ...

MR. GUSTAFSON: Is now a good time to break for lunch, Lou?

MR. GOTTLIEB: Why not?

VIDEOGRAPHER: We're going off the record at 12:02 p.m. We're off the record.

(LUNCH RECESS TAKEN FROM 12:02 P.M. TO 12:59 P.M.)

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(EXHIBITS NUMBERED 14 AND 15 WERE MARKED FOR IDENTIFICATION)

VIDEOGRAPHER: We're going back on the record at 12:59 p.m.

MR. GOTTLIEB: Good afternoon.

MR. GUSTAFSON: Good afternoon.

THE WITNESS: Hi.

BY MR. GOTTLIEB:

Q. You're in no mood for good afternoons, I see.

A. Hello there.

Q. Okay.

I've just handed you a document that we marked as Exhibit 15. It is dated July 12th, 1976. It's the research report submitted by Leighton Chen, entitled "pH of Smoke, A Review". And you are cc'ed on that report.

Was Leighton Chen a person who reported to you in the research department?

A. No.

Q. Do you know why he sent you a copy of the research report on pH of smoke?

MR. GUSTAFSON: Objection. Calls for speculation. You can respond.

THE WITNESS: It looks like he sent

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one to all of the managers or department heads, whatever. Or people that had done anything in that area, I guess.

BY MR. GOTTLIEB:

Q. Was this an area that you had an interest in back in 1976, pH of smoke?

A. Must have been.

Q. The last sentence on the first page states: (Reading)

> Finally, the chemical and physical consequences of changing smoke pH are considered, especially as they relate to questions of physiological impact, flavor and taste.

Do you understand -- do you have an understanding as to whether changing smoke pH will change the taste of a cigarette?

A. Not personally, no.

Q. Do you have an understanding as to whether it would change the flavor of a cigarette?

A. No.

Q. Or whether it would change the

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physiological impact of a cigarette?
A. No.
Q. If you'd take a look at page that has number 6 on the top. Under "Manufacturing Parameters". It states there: (Reading)

> The most important means of controlling the smoke pH in terms of the cigarette construction is controlling the chemical composition of the smoke delivery by means of filter design and selective filtration.

Do you have an understanding as to whether filter design can change the pH of smoke?
A. I do not.
Q. Now, I'm talking about smoke condensate.
A. I do not.
Q. Will selective filtration affect smoke pH?
A. I do not know.
Q. Turn to page 11, please. Under the heading of "Taste and Flavor". The document

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states: (Reading)

So far, all these changes have been physical or chemical changes which are functionally dependent on pH. Less quantifiable -- quantificable quantities are also critically important. The whole question of flavor and taste begs discussion. Investigators have felt that an increase in the pH of smoke resulted in greater physiological (throat and chest) impact and toxicity. This has been attributed to the increase in the amount of free base nicotine with increased pH.

First, Ms. Ireland, do you agree that there is more free base nicotine with increased pH?

A. I don't know.

Q. Would you agree that an increase in the pH of smoke results in increased toxicity?

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A. I have no clue. Don't even know what he's talking about.

Q. Have you heard that investigators believed that an increase in pH of smoke results in greater physiological impact?

A. Have I heard that?

Q. Yes.

A. I can't say that I necessarily know that I have heard that, just sort of an impression that -- but I don't know about physiological impact. That's out of my field.

Q. Take a look at the bottom of the page. It notes the pH of a number of different cigarettes: Kent, Kool, Marlboro, Winston, and 1R1.

Did your department do pH analysis of competitors' cigarettes?

A. I think we did that one time on cigarette condensate. Or had it done.

Q. Do you know where these figures were derived from, the ones that are printed here?

A. No. I have no idea.

Q. What is 1R1?

A. It was a large batch of cigarettes that was supplied to the tobacco industries, in my

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understanding, so that we'd all have -- be working from the same base. It was just a -- it was just -- just used as a standard --

Q. Sort of a control cigarette?

A. Sort of control, yeah.

Q. From this chart, it appears that Kent and 1R1 have approximately the same PH; is that correct?

A. It appears so.

Q. But that Marlboro and Kool have significantly higher pH's; is that correct?

A. I don't know what you mean by "significant". I don't -- I don't know what modifications in pH units indicate significant.

Q. Well, if Marlboro was at 6.98 while Kent was at 5.93.

A. Right.

Q. And Kool was approximately the same level as Marlboro, Kool being 7.12.

A. Right.

Q. Do you have an understanding as to whether or not an increase by a full point in pH is significant in the context of cigarette smoke?

A. No, I do not know.

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Q. The last line in this page indicates that "the market leaders appear to have the higher pH's and, hence, the higher concentration of free base nicotine."

Do you have an understanding that Marlboro and Kool were market leaders in 1976?

A. That's what he says.

Q. Did you have a general understanding that the market leaders, during an extended period of time, not just 1976, were also those cigarettes that had higher pH's?

A. No.

MR. GUSTAFSON: Objection. I don't know what period of time we're talking about. She's not even testified that she has an understanding of which cigarettes were the market leaders. She's just saying this is what the document reports.

BY MR. GOTTLIEB:

Q. Do you have an understanding as to whether market leaders, say the top ten selling cigarettes in the industry, were cigarettes that had a higher than average pH?

A. I have no idea.

Q. Did you ever see charts that

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compared pH levels to sales?
A. No.
Q. Did you ever see charts that compared free nicotine levels to sales?
A. No.
Q. Did you ever see charts that compared nicotine levels to sales?
A. No. Not that I know -- not that I remember.
Q. Okay. Did you ever have discussions with people in the marketing department of Lorillard?
A. Just --
MR. GUSTAFSON: On any topic, Lou?
MR. GOTTLIEB: Well, let's be very, very broad at first and say on any topic. Any topic related to work. I don't mean on, you know, who has the prettiest garden.
THE WITNESS: As far as I know, I only met, ever, one or two of those people and that was in a golfing situation. We don't --
BY MR. GOTTLIEB:
Q. So you didn't have business dealings --
A. No.

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Q. -- with people from the marketing department?

A. Unfortunately. They have good parties.

Q. Maybe they'll invite me some day.

MR. GUSTAFSON: Yeah. Don't hold your breath, huh?

THE WITNESS: You'll probably get invited before I do again.

BY MR. GOTTLIEB:

Q. On page 12, at the top of the page.

A. Uh-huh.

Q. It states: (Reading)

> If the desired goal is defined to be increased nicotine yield in the delivered smoke, there appear to be only two alternatives: Either increase the absolute yield of delivered nicotine; or increase the pH, which increases the "apparent" nicotine content without changing the absolute amount.

Do you know what is meant by the "apparent nicotine content" --

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MR. GUSTAFSON: Objection.
BY MR. GOTTLIEB:
Q. -- in that context?
MR. GUSTAFSON: Objection. Requires speculation.
BY MR. GOTTLIEB:
Q. Do you have an understanding of what that phrase means?
A. I don't really know. But it would seem to be the amount that you're capable of measuring.
Q. To your understanding, does this mean that the FTC -- that, if you increased the amount of free nicotine, the FTC measurement could remain the same, but the smoker would actually receive more nicotine?
A. I don't know.
Q. You've stated before that, to your knowledge at least, Lorillard has never used ammonia compounds in its cigarettes for commercial sale. Do you know whether Lorillard has used other bases as additives in cigarettes for commercial sale?
MR. GUSTAFSON: Objection. I don't know what you mean by "bases". I think it's vague and ambiguous.

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BY MR. GOTTLIEB:

Q. Do you know what a base is?

A. It's an alkali of sorts or -- no, I do not know.

Q. You don't know whether Lorillard has used any --

A. To my knowledge --

Q. -- bases as additives?

A. -- they have not. To my knowledge, no.

Q. Do you have familiarity with the additives that Lorillard has put into its cigarettes?

A. Some knowledge.

Q. And to your knowledge, are any of those additives bases?

A. No.

MR. GOTTLIEB: Please mark as Exhibit 16 a document dated December 13th, 1976. "Final Report, ISNAP," submitted by Ms. Ireland.

(EXHIBIT NUMBER 16 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. The summary or abstract states: (Reading)

In an attempt to produce a 2-milligram CPM cigarette

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with acceptable impact, nicotine and ammonia have been added to RL, bright and total blend tobaccos. The expert smoke panel has evaluated some prototypes. Filtration and pH systems are being studied.

Do you recall writing this final report?

A. Not really. But I'm sure I did.

Q. Were you personally involved in the research related to the subject matter of this report?

MR. GUSTAFSON: If you need a moment to read the document, please do so.

(WITNESS REVIEWS DOCUMENT)

THE WITNESS: I think this refers back to an earlier memo in which the ammonia and nicotine were added in a pilot plant pot. And as far as I know, once they were evaluated by Terry Jessup, that was the end of the whole thing.

BY MR. GOTTLIEB:

Q. Can you explain why you were the

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person who wrote up this final report?
A. If it's the person I'm thinking that did the work, he didn't write reports very well. So as a method of finalizing what had been done, I just wrote it up.
Q. So it's not your research that you're writing up, it's somebody else's research?
A. Right.
Q. Who was that other person?
A. Bill Routh, as well as I remember, was the person on the other document.
Q. Take a look at the third page of the document, third paragraph. It states: (Reading)

> Addition of nicotine has a direct effect on the pH of the leaf, although not as great as might be expected. Based on the smoke pH of cigarettes made with added nicotine, some, if not all, of the added nicotine is delivered into the smoke as free nicotine.

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How did you come to the conclusion that some, if not all, the added nicotine is delivered into the smoke as free nicotine?

A. It's just a hypotheses, because we had no measure of free nicotine.

Q. Is there anything in this report that indicates that this is an hypothesis as opposed to a finding of your research?

MR. GUSTAFSON: If you want her to answer that question, I want her to read the entire document, because you said if there's anything in this entire report that indicates that. Let's not just focus on two sentences and have her respond to it. If you want a response, I'm going to ask you, Sue, to read the entire document.

MR. GOTTLIEB: If you think it's necessary to read the document in order to answer, please do so.

THE WITNESS: Would you restate the question.

BY MR. GOTTLIEB:

Q. Well, you said that this is a hypothesis that you made. And from reading the statement, I can't tell that it's an hypothesis.

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I don't know if it's an hypothesis or a conclusion. And I'm asking you: Can you tell me how a reader would determine that this is only a hypothesis?

A. Well, to those who are in the know, those that would be reading this report know -- would know that there is no analysis for free nicotine that we were doing and were capable of doing. So it had to be a subjective thought.

Q. So you're saying it's not from the document itself, it's from the knowledge of the reader?

A. Right. That there was -- there was no measure of that.

Q. Okay.

I'm going to show you a document we're going to mark as Exhibit 17, dated January 4th, 1977. It's from M. A. Skladanowski to Ms. Ireland. Subject is "Addition of Nicotine Extract to a Blend".

(EXHIBIT NUMBER 17 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. What was the relation between M. A. Skladanowski and yourself, back in 1977?

A. I was her supervisor, I think, at that

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time.

I was her supervisor at that time. I think.

Q. Was she a chemist?

A. Yes.

Q. Did she do good work?

A. Sure. Did the best she could.

Q. Did you rely on her conclusions?

MR. GUSTAFSON: Objection. Are you talking about this project or are you talking about every project she ever performed?

MR. GOTTLIEB: In general.

MR. GUSTAFSON: It's a very broad question.

THE WITNESS: People do good work and you evaluate it based on that particular -- you know, I never accepted anything wholesale from anyone.

MR. GOTTLIEB: Okay.

BY MR. GOTTLIEB:

Q. The document begins as follows: (Reading)

It has been observed that added nicotine seems to have a greater effect on

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smoke impact and harshness than natural nicotine in the leaf.

Do you know why that is?

A. No.

Q. Do you know that is true?

A. I don't know that that is true.

Q. On the third page that I've handed you, and I note that it is marked page 4.

A. Uh-huh.

Q. Apparently there's a page missing in this document.

A. Here it is. In this one it's the last page, page 3.

Q. I'll withdraw the question. I think that this --

MR. GUSTAFSON: I think you got it put together wrong.

MR. GOTTLIEB: -- document was put together incorrectly. Of course, I didn't have a question pending, so I can't really withdraw it, can I? But you'll let me get away with that.

MR. GUSTAFSON: That's one of the tricks of the plaintiff's lawyers, is to slide

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the wrong pages in there in his documents.

THE WITNESS: My boss used to raise hell with me with that.

MR. GOTTLIEB: I assume that's off the record.

MR. GUSTAFSON: That's fine.

MR. GOTTLIEB: And if not, then it should be noted that it was said in jest.

MR. GUSTAFSON: It was said completely in jest. Completely in jest. I would never suggest that of Mr. Gottlieb.

MR. GOTTLIEB: When you see it in writing later on, you don't know if the man was laughing or not. And --

MR. GUSTAFSON: Thank goodness we have this on video. One hundred percent in jest.

THE WITNESS: So far.

MR. GUSTAFSON: I'm just glad defendants are not as sensitive as plaintiff's counsel.

MR. GOTTLIEB: Perhaps defendants are used to -- let's stop over here.

MR. GUSTAFSON: All right.

THE WITNESS: Did you get that?

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BY MR. GOTTLIEB:

Q. Let me hand you a document. We'll mark it as Exhibit 18. It's a research memo dated February 17th, 1977, submitted by W. E. Routh. Ms. Ireland is copied on it. The topic is "Ammonia Treatment of Tobacco".

(EXHIBIT NUMBER 18 WAS MARKED FOR IDENTIFICATION)

(WITNESS REVIEWS DOCUMENT)

BY MR. GOTTLIEB:

Q. I'm going to look at the second page of the document. I'll start about nine lines down. It says: (Reading)

> By increasing the ratio of free nicotine to bound nicotine in the tobacco, this effect will occur. Nicotine is basic tobacco smoke, pH 8.0, is absorbed much more readily through the mucous membrane of the mouth than is nicotine in acid tobacco smoke, pH 5.6, because of the higher concentration of the unprotonated nicotine in basic smoke. Several methods

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of increasing the free nicotine have been studied, namely: (1) the addition of free nicotine to tobacco; (2) use of tobacco blends which have high pH and high percent of nicotine; (3) the treatment of tobacco with a base, and (4) the air dilution of cigarette smoke by the use of special paper and filters.

Once again, I'm a little confused. Because, on the one hand, there's testimony that free nicotine is difficult, if not impossible, to measure. And on the other hand, documents seem to indicate that free nicotine is being added to tobacco. Could you clarify that point for me?

A. Free nicotine, as far as I'm concerned, you cannot measure on tobacco because it's in a -- a gross mixture, and you can't differentiate one from the other.

Q. You can't differentiate free nicotine from bound nicotine?

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A. Correct.

Q. So would you say this person who wrote this is just plain wrong in saying that -- that he added -- or that free nicotine can be added to tobacco?

MR. GUSTAFSON: I'm going to object --

THE WITNESS: No.

MR. GUSTAFSON: You can add --

THE WITNESS: You can add free nicotine to tobacco. But it doesn't necessarily stay that way.

BY MR. GOTTLIEB:

Q. It doesn't stay as free nicotine?

A. It does not stay as free nicotine.

Q. It becomes -- what does it become?

A. It becomes bound with the other materials present. I'm assuming. And I don't know to what level, because we can't measure it.

Q. It says that certain tobacco blends have high pH and high percent of nicotine.

What tobacco blends, to your knowledge, have a high pH?

MR. GUSTAFSON: Object. The question is vague and ambiguous.

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THE WITNESS: What? Tobaccos, period? Or tobacco blends, did you say?

BY MR. GOTTLIEB:

Q. Under number 2, it says: (Reading)

The use of tobacco blends which have high pH and high percent of nicotine.

And I'm wondering, do you have any knowledge about tobacco blends that have high pH.

A. Certain tobaccos within the blends have varying pH's.

Q. For example --

A. There's -- for example, Maryland and burley will have a different pH than bright. Now, I do not know what those differences are with any pH unit measure. I don't know that. I know that they're different, but I --

Q. Do you know --

A. -- don't know what they are.

Q. Do you know whether Lorillard blended different types of tobacco for the purpose of increasing the pH in the total blend?

A. I do not know. I was not in blending.

Q. Okay. Item Number 4 states that

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another way of increasing free nicotine is that the air dilution of cigarette smoke by the use of special paper and filters.

We've spoken about air dilution filters before. What kind of special paper would increase free nicotine?

MR. GUSTAFSON: Well, I object. It says --

BY MR. GOTTLIEB:

Q. To your knowledge.

MR. GUSTAFSON: It says "several methods of increasing have been studied." It doesn't say that they, in fact, do increase it or they don't, it just says that they've been studied.

BY MR. GOTTLIEB:

Q. Okay. Do you know whether any special paper would have an effect upon the amount of free nicotine in cigarettes?

A. No.

Q. Do you know whether Lorillard conducted studies to that effect --

A. No.

Q. -- to determine --

A. No.

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Q. Have you heard of any studies that were conducted, whether by Lorillard or by anyone else, regarding the use of special paper to increase the amount of free nicotine in cigarettes?

A. No.

Q. Did Lorillard ever investigate the cost of adding nicotine to commercial cigarettes?

A. I don't know.

Q. Let me show you a document dated February 18th, 1977. It's from T. M. Larson to Ms. Ireland. The subject is the "Estimated Cost of Adding Two Percent Nicotine to RL - Response to Question from Dr. F. J. Schultz."

A. Uh-huh.

(EXHIBIT NUMBER 19 WAS MARKED FOR IDENTIFICATION)

(WITNESS REVIEWS DOCUMENT)

BY MR. GOTTLIEB:

Q. Have you had a chance to peruse the document?

A. Yes. Somewhat.

Q. Does this document refresh your recollection as to whether or not Lorillard investigated the cost of adding nicotine to

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cigarettes on a commercial basis?

MR. GUSTAFSON: I'm going to object. That's not what this document says. It's not about commercial doc -- commercial cigarettes.

THE WITNESS: Huh-uh.

BY MR. GOTTLIEB:

Q. If you would take a look at the last paragraph on the first page, it says: (Reading)

> To figure the amount of N. Rustica necessary to supply nicotine through the RL, for a 5 billion unit cigarette, the following liberal assumptions were made.

When we're talking about five billion units, are we talking about experimental use of a cigarette or commercial use of a cigarette?

A. That was just a pie in the sky number, I'm sure.

Q. Well, still, with 5 billion cigarettes, is this commercial or experimental?

A. 5 billion would probably be commercial. But it was --

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Q. Otherwise it would be a very big experiment, wouldn't it.

A. Yeah. Sometimes some of the guys like to work with big stuff. But, you know, that was just a supposition to get a ...

Q. Well, this estimate seems to have been in response to a question from Dr. Schultz --

A. Uh-huh.

Q. Do you recall him asking for this information?

A. No.

Q. Do you know why T. M. Larson would send you this memo rather than sending it to Dr. Schultz?

A. The ladder of command. I was his supervisor.

Q. What was his function at Lorillard?

A. Chemist.

Q. Did you pass on this memo to Dr. Schultz?

A. It was copied to Dr. Schultz.

Q. Did you discuss this -- the subject of this memo with Dr. Schultz?

A. No. It's just information.

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Q. Do you know whether this information was being compiled because Lorillard was considering the use of nicotine -- strike that.

Do you know whether this information was sought because Lorillard was considering the commercial production of cigarettes that included added nicotine?

A. I have no idea what they were -- what their thoughts were.

We wrote this many memos, I don't see how we ever did any work.

Q. I'm going to show you a memo that we're going to mark as Exhibit Number 20. It's dated April 4th, 1977, submitted by M. A. Skladanowski. The title is "Vapor Phase Removal and Nicotine Augmentation with All Air Dilution Cigarettes," and Ms. Ireland is copied on it.

(EXHIBIT NUMBER 20 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. The summary or the abstract on the first page states: (Reading)

> A 6 milligram total air dilution cigarette, without a cellulose acetate filter plug, gave the following

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removal efficiencies.

After it cites the efficiencies, it notes: (Reading)

The nicotine to tar ratio was increased 64 percent.

Do you know whether the nicotine to tar ratio was increased in any commercial cigarettes produced by Lorillard?

A. No.

Q. No, you're not -- you don't know, or no, it did not?

A. Say that again.

Q. Well, you said no --

A. Yeah, no.

Q. -- and I was wondering, does a "no" mean that Lorillard never produced a commercial cigarette that increased the nicotine to tar ratio, or does "no" mean you're not certain whether Lorillard did it or didn't do it?

A. It's a strange question. If you talk about filter versus non-filter, that ratio may have changed. But, as far as I know, that was not the -- an intent or -- that was not anything that was just done.

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Q. Okay. Among filter cigarettes --
A. Yeah. Not that I --
Q. -- did Lorillard do anything to change the nicotine to tar ratio, to your knowledge?
A. Not -- not that I know of, no.
Q. The next page, second paragraph states: (Reading)

> At the present time Lorillard makes two cigarettes with combined air dilution and cellulose acetate filtering systems. The nicotine to tar ratios in the smoke of both cigarettes is greater than the ratios in the respective controls.

Do you know which cigarettes Lorillard was making in 1977 that had combined air dilution and cellulose acetate filtering systems?
A. No.
Q. Do you know whether such a system, in other words, a -- a filter that has combined air dilution and cellulose acetate filtering,

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would affect the nicotine to tar ratio of a cigarette?

A. Do I know how?

Q. Do you know whether it would affect the tar -- the nicotine to tar ratio in a cigarette?

MR. GUSTAFSON: Object to the form of the question.

THE WITNESS: I don't know.

(WITNESS REVIEWS DOCUMENT)

BY MR. GOTTLIEB:

Q. Ms. Ireland, you were not --

MR. GUSTAFSON: Go ahead and let him ask a question.

BY MR. GOTTLIEB:

Q. You were not an expert in the area of air dilution of cigarettes, were you?

A. Oh, no.

Q. Do you know why you received a copy of this research report?

A. It was an area in which one of the people that was looking at it worked for me.

Q. In other words, Ms. Skladanowski?

A. Was under my supervision, uh-huh.

Q. Now, there were people, in other

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words, who were under your supervision who were working on the nicotine augmentation program; is that correct?

A. Uh-huh.

Q. Is that a yes?

A. Yes.

Q. And when they did research, even if it wasn't in your area of expertise, they sent you a copy of their report. Is that what happened?

A. Generally, yeah. As well as I remember.

Q. And what would you do with the report in such an instance in which you're not an expert in the field, the person who you were supervising probably is an expert in that field --

MR. GUSTAFSON: I'm going to object.

MR. GOTTLIEB: -- has done the work?

MR. GUSTAFSON: The question is almost completely wihtout any context in terms of what the nature of the report is about. And --

BY MR. GOTTLIEB:

Q. Well, for example, a report on nicotine augmentation with air dilution

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cigarettes. You receive the report; what happens to it?

A. I read it. But that does not mean that she's an expert. It takes an awful lot of stuff to be an expert.

Q. Okay, she's done work in that area?

A. She did this work in this area. It may have been the only time, but, yes.

Q. Okay. You read her report.

A. Uh-huh.

Q. What do you do with the report next? Do you speak to her about it? Do you talk to a -- to your supervisor about it?

A. We may discuss it; we may not.

Q. By "we," are you talking about you and the person who wrote the report?

A. The author of the report, yeah.

Q. How about you and the person who was your supervisor?

A. Not unless they have some specific comments, you know.

Q. Was your supervisor Dr. Minnemeyer?

A. Right.

Q. And that was during most of the '70s and '80s?

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A. Yes.

Q. Have you maintained contact with Dr. Minnemeyer?

A. No.

Q. Since you left Lorillard, have you seen him?

A. He's been back to, like, a Christmas party or something, just -- no. Other than that, no, I haven't seen him.

Q. Well, to the best of your recollection, with respect to reports that you received on the addition of ammonia to -- either tobacco or to the RL slurry, did you have conversations with the people who wrote the reports?

MR. GUSTAFSON: I object to the form of the question.

THE WITNESS: I may have. I -- you know, there's an awful lot of reports here. I don't -- certainly don't remember all of them.

BY MR. GOTTLIEB:

Q. Well, do you --

A. But I'm sure I -- I made every effort to make sure that I read every report. But how much of that is retained is variable, I suppose.

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Q. Well, do you recall whether you had what I'll call follow-up conversations or meetings with any of your supervisors, such as Dr. Minnemeyer or Dr. Schultz --

A. About this entity?

Q. -- on -- yes.

A. No, I don't know.

Q. You don't recall?

A. No.

Q. Same thing for reports relating to the addition of ammonia or ammonia compounds to -- to tobacco?

A. I -- right. I do not remember any follow-up conversations about those.

Q. Ms. Ireland, who is P. D. Schickedantz?

A. Dr. Schickedantz? Was a chemist in organic.

Q. Your area?

A. The organic section of R & D.

Q. Was that your area?

A. No.

Q. Let me show you a document dated April 13th, 1977, from Dr. Schickedantz to Dr. Minnemeyer. And we'll mark this as Exhibit

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Number 21.

(EXHIBIT NUMBER 21 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. The subject of this memorandum is "Gas Phase Ammoniation of Tobacco".

Take a look at Table I, which is the third page of the document. It talks about "Smoke Analysis and Calculated Amounts of Free Nicotine in Various Cigarette Brands".

Can you tell how the amount of free nicotine was calculated?

MR. GUSTAFSON: Sue, if you need to look at the entire document to answer that question, please do so. Obviously this table is --

THE WITNESS: I can tell you, I can't tell you how it was calculated.

BY MR. GOTTLIEB:

Q. Do you know who did the calculations?

A. I imagine, Paul.

MR. GUSTAFSON: Are you -- you know that or are you guessing?

THE WITNESS: I say, I imagine Paul Schickedantz did. I don't know who did them.

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Or how he did them.

MR. GUSTAFSON: Tell him what you know. As he said, don't speculate.

THE WITNESS: As I say, I don't know who did them or how he did them.

MR. GUSTAFSON: Okay.

BY MR. GOTTLIEB:

Q. This table indicates that the amount of free nicotine in various commercial cigarettes were measured. And the cigarettes were Now 85, Merit 85, Kool 85, Marlboro Lights, Vantage 85, True Blue, Winston, and then Kent Golden Lights.

Is that how you interpret this table?

A. That's what the table says.

Q. And it indicates, for example, that the amount of free nicotine in Kool 85's was 0.156 milligrams. Is that correct?

A. That's what it says.

Q. And the amount of free nicotine in Kent Golden Lights was 0.042 milligrams.

A. Right.

Q. So the Kool 85 had more than twice as much free nicotine --

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MR. GUSTAFSON: I'm going to object.
BY MR. GOTTLIEB:
Q. -- as the Kent Golden Lights with filter; is that correct?
MR. GUSTAFSON: My objection is, are you asking her whether she knows for a fact that these were the free nicotine deliveries for these brands of cigarettes? That's one thing. If that's your question then you can ask that. But are you just asking her, are these the numbers that appear on the document?
MR. GOTTLIEB: Well, this is a document written by a Lorillard scientist and --
MR. GUSTAFSON: Not Ms. Ireland.
MR. GOTTLIEB: -- and Ms. Ireland was working in the Lorillard product and development department --
THE WITNESS: No.
MR. GOTTLIEB: -- research and development department.
MR. GUSTAFSON: No.
THE WITNESS: No. I was in basic research.
BY MR. GOTTLIEB:
Q. Wasn't that part of the research and

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development department?
A. No. They're separate departments.
Q. Basic research was entirely separate from research and development?
A. Basic research and research -- totally different. They hardly talked to us. But go ahead.
Q. Did you have an understanding of the terminology used and the methodology used by Dr. Schickedantz?
A. I have not a clue what methodology he was using.
Q. Do you have a familiarity with his work in general?
MR. GUSTAFSON: Objection. What work are you talking about?
BY MR. GOTTLIEB:
Q. He worked for Lorillard. Did you have a familiarity with the level of work that he did there?
A. I have an opinion.
Q. You have an opinion?
A. (Witness nods head.)
Q. Would you share that with us.
MR. GUSTAFSON: The question is do

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you have any familiarity about his work. That's the question.

THE WITNESS: On occasion, I did have some familiarity with his work.

BY MR. GOTTLIEB:

Q. And what is that?

A. I -- I don't think he did very good work.

Q. How long was he at Lorillard?

A. He's still there.

Q. Do you know what his position is at Lorillard, at least as of the time you left?

A. He was a scientist of some sort -- or a research chemist, or what -- no, I don't know what his title was.

Q. Did he have any supervisory responsibilities?

A. Not to my knowledge.

Q. Do you know when he first joined Lorillard?

A. Not really.

Q. Do you know if he was there for a while when he issued this report back in 1977?

A. I don't even know if I was there for a while. No, I don't know. I don't know when he came to work there.

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Q. Do you know whether he was there when you joined Lorillard?
A. He was not there when I joined Lorillard, as well as I remember. But I wouldn't want to be hung for that.
Q. I know you just told me this, but I've forgotten. Can you tell me what department at Lorillard Dr. Schickedantz --
A. Schickedantz.
Q. -- worked for?
A. He was in organic -- the organic section.
Q. Do you know whether anyone other than Dr. Schickedantz in the organic section measured free nicotine?
A. He didn't measure free nicotine.
Q. Doesn't this document indicate that the amounts of free nicotine were measured or calculated?
A. Calculated. And I have never given you any indication that calculations have any valid response.
I'm sorry.
Q. That's quite all right.
Do you -- can you explain to me how you know that the amount of free nicotine was

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calculated as opposed to measured?
A. It says calculated.
Q. I'm sorry. Correct.
A. And I know he couldn't measure it, because we couldn't. And he's not as good as we are. I mean, we are in analytical, he was in organic.
Q. That speaks volumes.
A. It certainly does. An analyst usually knows what all they analyze. If they can. And they admit it if they can't.
Q. Do you know whether other scientists working at Lorillard in the organic section calculated the amount of free nicotine in Lorillard products?
A. I do not know.
Q. Do you know whether any such scientists calculated the amount of free nicotine in competitors' products?
A. I do not know.
Q. Do you know whether scientists at other parts of Lorillard either calculated the amount of free nicotine for Lorillard products or competitors' products?
A. No, I don't know.
Q. Do you know what nicotine migration

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means?
A. Vaguely.
Q. Is that a term that you used at work at Lorillard?
A. Right.
Q. What was the meaning of that term?
A. Essentially that it blends or moves from one site to another site.
Q. Is that an area of research that you were interested in?
A. It's finding out about your product. Yes, it interests me.
Q. Is that an area in which Lorillard conducted research over the years?
A. We did some.
Q. Do you know what the purpose of the research was?
A. I don't know that it was ever stated, but as far as I was concerned, it was to look at how nicotine behaved, if we could measure that.
Q. Well, was the purpose to see how it behaved in a commercial cigarette or to make it behave in a particular way in a new cigarette?
A. To see how it behaved, if we could determine that.

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Q. Was there any attempt to make the nicotine move to some part of the cigarette?
A. We made some attempts to do that.
Q. Where did you want the nicotine to move to?
A. Well, one study was looking to see if it would move to the paper, the periphery of the product -- of the cigarette.
Q. Would that create any benefit to the smoker?
A. Well, we had -- literature had indicated that a certain percentage of the smoke was drawn into the smoker's mouth from the outside periphery of the cigarette.
Q. Was the thought that, if you could get more nicotine on the outside periphery, the smoker would then be able to obtain more nicotine from that cigarette?
A. That was a thought.
Q. And what was the result of your experiment in that area?
A. Must have not been very good. I don't remember the exact result of it, but I think it -- I don't know whether we -- we succeeded or not.

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Q. Let me show you a document that's dated February 23rd, 1978. We'll mark it as Exhibit 22.

(EXHIBIT NUMBER 22 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. It's from Ms. Ireland to Dr. Minnemeyer. The subject was "Nicotine Migration - Planned Experimentation".

It states that: (Reading)

> This is a list of the steps that are planned in the nicotine migration project.

And the first step was to "maximize migration". The second step was to "optimize migration of nicotine to RL from a flavor or impact basis". Then you wanted to "analyze filters for possible migration of nicotine to them in our product and in competition". Number 4 was "continue investigation of materials that would be suitable for nicotine migration".

Were these proposals for projects to be carried out by your department?

A. Yes.

Q. Were they in fact carried out?

A. Some of them were, I think; some of them

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probably were not.

Q. Which ones were carried out?

A. I don't remember.

Q. Do you recall whether there was an attempt to have nicotine migrate toward the filters of cigarettes?

A. There may have been.

Q. Do you know what the purpose of such an experiment would have been?

A. To see what happens.

Q. Well, was the ultimate purpose to enable the smoker to obtain more nicotine from the cigarette?

A. It could be. Or, you know, whether it just stayed there.

Q. I'm sorry, but --

A. Whether the nicotine might just stay in the filter. If it moved to the filter, it doesn't mean it might be -- it would be displaced.

Q. Who would have to approve this type of a project?

A. Harry would be the first step and then --

Q. Who is Harry?

A. Dr. Minnemeyer. Excuse me.

Q. Did anybody else have to approve it?

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A. If he chose not to or didn't want to or wanted additional input, he -- he may -- if he said no, then we didn't do it.

Q. That was it, it's over.

A. Essentially.

Q. If he said yes, then somebody else would have to approve it anyway?

A. No.

Q. So he had the final say, whether it gets approved or not?

A. Not necessarily. If he didn't approve and somebody felt strongly enough that it should be, they might could go to the next level.

Q. And who would that be?

A. Dr. Schultz was his supervisor. Or his ...

Q. Do you know of any instances in which a research project was disapproved by Dr. Minnemeyer but approved by Dr. Schultz?

A. No. Not really. But it could have happened and I not know about it.

Q. Now, why is it that you were the person who was writing up this proposal for nicotine migration experiments?

A. Why?

Q. In other words, that's not your area

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of expertise, is it?

A. Well, you don't have to be an expert to try something. And we had people in that -- our department that could measure some of these things, and the time to do it, so it seemed like an interesting thing to do.

Q. Well, is that something that came from you as an idea, or did it come from somebody in your department as an idea, did it come from some outside source as an idea?

A. It probably came from an outside source.

Q. Do you recall who?

A. Probably product development.

Q. Do you know who at product development?

A. Probably --

MR. GUSTAFSON: Sue, do you know or not? As he's told you, don't speculate. Now, if you know, then tell him. But if you don't --

THE WITNESS: I know that the first thought of migration occurred when the guys in product development found that the reconstituted leaf in one of our competitor's product had a different level of nicotine than our reconstituted leaf.

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BY MR. GOTTLIEB:

Q. A higher level of nicotine?

A. Right.

Q. Do you recall which product that was?

A. It may have been more than one. I don't -- it was probably -- I don't know. Okay?

Q. Do you recall whether it was either Marlboro or Kool?

A. I wouldn't swear to it. You know, they picked out all sorts of stuff.

Q. Okay.

A. So this came about by us trying to find out why theirs appeared to be -- their blend appeared to be more uniform, why their levels of nicotine were higher than ours. And so we just started devising, as well as we could, some research to determine what was going on. It's that simple.

Q. Okay. Did you ever determine whether or not your competitors were, in fact, using some sort of a nicotine migration process?

A. No.

Q. Did you do more research that indicated that that might have been a fact? And

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without absolute proof; but, still, the reverse engineering, you had a good suspicion?

A. Do you want to rephrase that question in that light?

Q. Sure. Did there come a point where you had a reasonable basis for believing that some of your competitors might be using a nicotine migration process in some of their commercial products?

MR. GUSTAFSON: Object to the form of the question.

THE WITNESS: No.

BY MR. GOTTLIEB:

Q. Did you do research to determine whether your competitors were using a nicotine migration process in any of their commercial products?

A. No.

Q. Did you come to the conclusion that some of your competitors might be using a nicotine migration process in some of their commercial products?

A. No.

Q. You talked to me -- you said -- stated earlier that you were informed that some

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of your competitors had higher nicotines in their RL than Lorillard had; is that correct?

A. That's correct.

Q. Is that a finding that occurred at one point in time? Or was that something which Lorillard found repeatedly over a period of time?

A. I know they found it one time. If they ever did it again, I don't know.

Q. Do you know whether Lorillard ever made any attempts to increase the nicotine level in its RL? And I don't mean experimentally, I mean commercially.

A. As far as I know, no.

Q. Would you agree with the statement that tobacco scientists know that physiological satisfaction is almost totally related to nicotine intake?

MR. GUSTAFSON: Object to the form --

THE WITNESS: Would I agree with that?

MR. GUSTAFSON: Object to the form of the question.

MR. GOTTLIEB: Yes.

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THE WITNESS: Did you say would I agree with that?

MR. GOTTLIEB: Yes.

THE WITNESS: I have not a clue. I don't; but I don't know what physiological is, so ...

MR. GOTTLIEB: Let me show you a document dated April 13th, 1977. We can mark it as Exhibit 23. It is from Dr. Minnemeyer to Dr. Spears. Subject is "Present Status of the Nicotine Enrichment Project".

(EXHIBIT NUMBER 23 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. To your understanding, is the nicotine enrichment project the same as nicotine augmentation project?

A. That would seem reasonable.

Q. Take a look at the last paragraph in the first page. It states: (Reading)

> Compared to conventional filter cigarettes, a cigarette delivering 2 milligrams of tar would be expected to have very little taste, and to deliver very

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little nicotine to contribute to the smoker's physiological satisfaction. Tobacco scientists know that physiological satisfaction is almost totally related to nicotine intake.

Now, would you say that Dr. Minnemeyer was not correct in making that statement?

MR. GUSTAFSON: Objection. I object to the form of the question.

BY MR. GOTTLIEB:

Q. Do you believe that Dr. Minnemeyer was wrong when he said "tobacco scientists know that physiological satisfaction is almost totally related to nicotire intake"?

A. I'm a tobacco scientist --

MR. GUSTAFSON: Object to the form of -- object to the form of the question.

THE WITNESS: I'm a tobacco scientist. He was wrong. But, then, I don't know what he means by "physiological satisfaction".

BY MR. GOTTLIEB:

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Q. Well, do you believe that -- you know, to your knowledge and your having associated with many tobacco scientists over the years -- and that's correct, you have associated with many tobacco scientists over the years, right?

A. Uh-huh. Uh-huh.

Q. I'm sorry. Could you please say "yes" for the record, rather than "uh-huh".

A. Yes, I have associated with a number of them.

Q. Through that association, did you ever get the impression that most tobacco scientists would agree that physiological satisfaction is almost totally related to nicotine intake?

A. No. I did not get that impression.

Q. Did you discuss that subject with those scientists?

A. Not specifically.

Q. Did you get the opposite impression --

A. Neither.

Q. So it's just an area that you don't know what most scientists would say?

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A. I guess not.

MR. GOTTLIEB: Why don't we take a five-minute break.

MR. GUSTAFSON: Okay.

VIDEOGRAPHER: We're going off the record at 2:10 p.m.

(RECESS TAKEN FROM 2:10 P.M. TO 2:18 P.M.)

VIDEOGRAPHER: We're going back on the record at 2:18 p.m.

BY MR. GOTTLIEB:

Q. Do you recall which chemicals or compounds Lorillard's scientists used in an attempt to get nicotine to migrate?

A. Some of them.

Q. Which ones do you recall?

A. You know, like I -- I remember malic acid and diammonium phosphate, are two that I remember.

Q. Would ammonium chloride be another one?

A. Possibly.

Q. Let me show you a document dated January 15th, 1980. We'll mark it as Exhibit 24. It's from R. W. Hurst to Ms. Ireland, and the subject is "Enhancement of Nicotine Delivery

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by Redistribution of Nicotine Within the Cigarette".

(EXHIBIT NUMBER 24 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. First of all, would you agree that the purpose of the experiments in nicotine migration was to enhance nicotine delivery?

A. A better word would be "redistribute".

Q. Well, redistribute so that the smoker would get more nicotine; is that correct?

A. Humph, I guess.

Q. And it states here in the first paragraph: (Reading)

> Malic acid and ammonium chloride solutions were applied to the papers of Triumphs and Golden Lights 85's to redistribute the nicotine by migration to the periphery of the cigarette.

Do you know whether those compounds are used in cigarette paper that Lorillard uses in its commercial products?

A. No.

Q. You don't know one way or the other?

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A. I have never heard of them using those compounds -- either of those compounds in product.

Q. Are you familiar with compounds that are used in Lorillard cigarette paper?

A. A couple, that are put in by the manufacturer -- or one, that I know of. There's only one I know of, and I'm not positive about that.

Q. Which one is that?

A. I thought, and I'm not sure again, that they used citric acid. I'm not sure. That's -- the paper manufacturers do that sort of thing. And I'm -- I'm not in to paper chemistry.

Q. Okay. Do you know whether Lorillard sets the specifications for the papers used in Lorillard cigarettes?

A. I don't know. That's done in another area; product development does that. If they have any specs for that sort of thing.

Q. Do you know whether all Lorillard cigarettes use the same paper?

A. No, I do not know.

Q. Do you know whether malic acid or ammonium chloride are used in any part of

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cigarettes that Lorillard has produced and sold commercially? When I say any "part," I mean the tobacco, the filter, the paper, any part of the cigarette.

A. I do not know that they are used. I don't think they are.

Q. Let me show you another document. This one is dated February 6th, 1980. We'll mark it as Exhibit Number 25. It is from Ms. Ireland to Dr. Minnemeyer. The subject is "Nicotine Manipulation, Migration and Reaction Mechanisms - A Research Proposal".

(EXHIBIT NUMBER 25 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. Starting in the second paragraph, it states: (Reading)

> In recent months, information generated during the nicotine migration project has been utilized in an effort to produce a cigarette still lower in tar than Kent III or Triumph, but with the satisfactory impact for the consumer.

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Do you recall an attempt to produce such a cigarette, one lower in tar than Kent III or Triumph, but with a satisfactory impact for the consumer?

A. We did not actually do that, try to -- no.

Q. When you say you didn't actually do it, does that mean you didn't try to do it or you didn't succeed in doing it?

A. We did not try -- our area was not to make cigarettes. We didn't make cigarettes. But the --

Q. In your department.

A. Right. So we did not make any cigarettes with lower -- lower than Kent III and Triumph.

Q. Okay, let me try to rephrase the question.

MR. GUSTAFSON: Just so the record is clear, when you use the word "we," you're referring to your analytical research department?

THE WITNESS: Myself and my section, right. Myself or anyone in my section did not.

BY MR. GOTTLIEB:

Q. Do you know whether Lorillard, in or about February of 1980, made an attempt to

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produce a cigarette with lower tar than Kent III or Triumph, but with a satisfactory impact for the consumer?

A. No.

Q. No, Lorillard did not, or no, you don't know?

A. I don't know.

Q. Then can you explain to me why you stated in this memorandum that the information generated during the nicotine migration project has been utilized in just such an effort.

A. Well, the guys in product development. That's not us. That's not me. They may have, in product development, tried to generate a cigarette that was lower in tar than these two stated here.

Q. And was your department contributing to that effort through the knowledge that it gained in the nicotine migration project?

A. No.

Q. Well, again, I find it hard to understand what it means when you say: (Reading)

> In recent months information generated during

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the nicotine migration project has been utilized in an effort to produce a cigarette still lower in tar than Kent III or Triumph.

A. In the memo that just passed here, a cigarette had been made with the nicotine on the outer periphery of the cigarette. That was a cigarette.

Q. That was an experimental cigarette?

A. An experimental cigarette. Which was not necessarily connected with these, as well as my memory serves me.

Q. Well, in 1980 did you have some knowledge about the efforts by Lorillard, not by your little department in Lorillard, but the efforts of -- by Lorillard to make a low tar/low nicotine cigarette using information generated during the nicotine migration project?

A. No. Not on any way, commercial or anything else. I am not aware of any such effort.

Q. Could you explain to me what was meant -- what you meant in this paragraph when you wrote that information generated during the nicotine migration project was utilized in an

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effort to produce a cigarette still lower in tar than Kent III or Triumph?

A. What I'm saying was, that we had these cigarettes --

Q. These experimental cigarettes?

A. -- the experimental cigarettes that he had been able to move the nicotine to the periphery.

Q. Yes.

A. And I believe he stated it showed an increased delivery. Did it? I've forgotten

Q. Okay.

A. So what we're saying here is that, indeed, in this one experimental cigarette that we did, we were able to migrate the nicotine to the periphery, and actually took that paper off and measured it for nicotine. And there was a higher level there.

Q. And from what it says here, wasn't Lorillard trying to produce a commercial cigarette at a lower in tar than Kent III or Triumph?

A. They may have been. But I -- you know, I'm not in product development. I don't know.

Q. The next paragraph reads: (Reading) It was recently

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demonstrated that nicotine could be manipulated within a cigarette to a specific area. The objective of such redistribution within the cigarette would be to increase the delivery of nicotine to the mainstream smoke.

Would you agree with that statement?

MR. GUSTAFSON: Which statement are you referring to?

MR. GOTTLIEB: Let's say the statement: "The objective of such redistribution within the cigarette would be to increase the delivery of nicotine to the mainstream smoke".

THE WITNESS: Yeah.

BY MR. GOTTLIEB:

Q. And when you said that it was recently demonstrated nicotine could be manipulated within a cigarette to a specific area, are you talking only about the periphery or also towards the filter?

A. This was just talking about the filter

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paper, as well as I remember. To the outer periphery.

Q. To the periphery of your paper?

A. To the paper. To the paper, period.

Q. Yeah.

VIDEOGRAPHER: Mr. Gottlieb, we have five minutes left on the videotape.

MR. GOTTLIEB: Okay. Why don't we change tapes now.

VIDEOGRAPHER: We're going off the record at 2:31 p.m.

(RECESS TAKEN FROM 2:31 P.M. TO 2:33 P.M.)

VIDEOGRAPHER: This is tape 3 of the videotape deposition of Sue Ireland. We're going back on the record at 2:33 p.m.

MR. GOTTLIEB: Please mark as Exhibit 26 a two-page document dated January 28th, 1981, from Ms. Ireland to Dr. Minnemeyer, and the subject "Proposal to Continue Research" -- excuse me. "Proposal to Continue Project B412 - Nicotine Manipulation, Migration and Reaction Mechanisms."

(EXHIBIT NUMBER 26 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. The document begins as follows:

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(Reading)

Recent findings have indicated that certain additives, when added to the tobacco, can accelerate the rate of migration of nicotine. Previous work has shown that cigarettes made with malic acid added to cigarette paper increases the amount of nicotine in the periphery of the tobacco and on the paper. This has shown a slight increase in the nicotine delivery to the mainstream smoke.

Continued work on this project will seek to optimize both tobacco additive and paper additive for maximum migration and increased delivery of nicotine to the mainstream smoke with rapid equilibration of the product. In addition, it would be

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desirable to control smoke pH so that a satisfactory taste and impact can be obtained.

Did you write this, back in January of 1981?

A. Apparently.

Q. Did you have an understanding at that point in time that control of smoke pH would lead to a satisfactory taste and impact?

A. Not really.

Q. Then why did you write that?

A. It sounded like a good thing to do. There has been a -- I didn't necessarily have an understanding of it, and still don't, but it was a popular thing to do, apparently.

Q. What do you mean by it was "popular"?

A. Everybody was looking at pH -- well, not everybody. But pH had been the subject of several papers, and we still didn't know much about it, and we were trying to find out how it did impact flavor.

Q. So at that point in time, in 1981, would it be fair to say that numerous researchers in the Lorillard research department

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were of the belief that the control of smoke pH would affect taste and impact?

MR. GUSTAFSON: Objection. That completely mischaracterizes Ms. Ireland's testimony. She's not even stated that she had that belief, let alone that any other scientist in the Lorillard research department.

But you can respond to the question, Sue.

THE WITNESS: Trying to find out if -- if indeed pH and what, if any, effect pH might have, if we could control it, on the taste and satisfaction of product -- of the consumer product.

BY MR. GOTTLIEB:

Q. Well, my understanding of what you said, and please correct me if I'm wrong, is, when you wrote this, you didn't -- when you wrote the sentence "In addition it would be desirable to control smoke pH so that a satisfactory taste and impact can be obtained," you didn't know for sure that that would happen, but this was a topic that was discussed by many researchers at Lorillard and, therefore, you felt it was an appropriate thing to put into

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your memo. Is that a fair characterization?

MR. GUSTAFSON: Same objection. Mischaracterizes prior testimony.

THE WITNESS: I don't know that many people. By "many," you sound like -- there weren't that many of us. There may have been one or two other people that had mentioned pH. And obviously there were one or two people that had mentioned pH. And it was just an effort to see -- if it -- there was any validity in that -- their comments --

BY MR. GOTTLIEB:

Q. And you were --

A. -- whosever they were.

Q. And you were influenced by the opinions of other Lorillard researchers who thought that smoke pH would impact -- sorry, would be related to satisfactory taste and impact?

MR. GUSTAFSON: Objection. Lou, I still think you're mischaracterizing her testimony. I believe her testimony was that this idea came from the literature, not necessarily from other Lorillard scientists. And she can tell us who -- which of us are

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right, or maybe neither of us are right.

THE WITNESS: I don't know that either of you are. I don't know whether this --

MR. GOTTLIEB: Mischaracterizing her testimony. Objection.

THE WITNESS: This thought came either from literature or -- you know, you're exposed to an awful lot of input, whether you read it or hear it or whatever.

There seemed to be, at that time, thoughts that pH was a direct correlation between one factor and another, some of which I may or may not have believed. This was an effort to perhaps try to characterize if pH did influence anything about the product.

BY MR. GOTTLIEB:

Q. Well, if I understand you correctly, you were reading the literature, and in the literature you found that some scientists believed that smoke pH affects satisfaction and impact; is that correct?

A. PH on -- in some instances had an impact. I guess. I don't know whether it was pH or not. It could have been other -- some other unmeasurable compound. But -- or compounds.

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But anyway, this was an attempt to characterize the relationship between pH and what was delivered to the smoker, or to the condensate.

Q. And at that time, back in 1981, there were scientists whose reports you read, some within Lorillard, some outside of Lorillard, who wrote that pH affects smoker's satisfaction and smoking impact?

MR. GUSTAFSON: Objection. Mischaracterizes testimony.

THE WITNESS: I don't ever remember seeing anything specifically written to that effect.

BY MR. GOTTLIEB:

Q. Do you recall seeing hypotheses to that effect?

A. I saw some hypotheses that I wouldn't believe, forever. But, you know, there's a lot of that out there.

Q. Well, I'm just trying to understand what it is that influenced you to write this sentence, and I guess I'm having a difficult time doing that.

Were you being influenced by the

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literature? Were you being influenced by what other researchers, instead of Lorillard, were saying? Was it a combination of both?

A. I -- I cannot remember specifically what prevailed on me to write that as it was written, whether it was something I had read, something that I had seen in reports, something that I had discussed with someone. I have no idea the exact source. But apparently I felt that pH may have an influence on modification of the vapor phase. Period.

Q. Did you ever come to the conclusion that pH definitely does or definitely does not have a relationship to satisfactory taste?

A. Never, as far as I know, came to any specific conclusions that could be documented.

Q. Well, I'm not talking about documentation, I'm saying did you -- did you personally, through your research, through your reading, through your association with other scientists, come to a conclusion?

A. No.

Q. So you think it's still an open question?

A. Yeah.

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Q. Same regarding impact; have you ever come to a conclusion as to whether or not smoke pH is related to impact?

A. I have no conclusions -- reached no conclusions, no.

Q. So you, again, think that's an open question?

A. Yeah.

Q. Do you know whether anyone at Lorillard reached any conclusions in that area? Maybe that didn't convince you, but that they personally came to a conclusion in that area.

A. I don't -- I don't know.

Q. I'd like to show you a document. We're going to mark it as Exhibit Number 27. It's dated August 5th, 1980. It's titled the "Current Project Listing for Research".

(EXHIBIT NUMBER 27 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. Did the Lorillard research department come out with documents of this nature on an annual basis during the time that you were at Lorillard?

A. I don't know that it was an annual basis; it was just a -- sometimes. I don't remember

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seeing one of these over my -- one or two times, maybe, even.

Q. You only saw this one or two times?

A. I may have seen it one or two times; I may have seen it a half dozen times. But I don't remember it as being something that happened on the first of the year, on a regular basis.

Q. Okay. So it happened every few years?

A. I might even say it was sporadic.

Q. Okay. I'd like to go down the list of some of these projects. I know that your name is there, but not for most of the projects. Please tell me what you know about --

A. I couldn't do everything.

Q. -- some of the projects that have your name and some that don't.

The third project, "Q126, Insects." Do you have any idea what that's about?

A. I have an idea.

Q. What is it about, to your knowledge?

A. That they're looking for tobacco beetles and seeing how many tobacco beetles we had.

Q. Tobacco beetles in tobacco that was already purchased and cut and stored?

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A. Right.

Q. The one that's listed as -- I think it's "C194," although it might be a Q, "Tobacco Flavor"?

A. C.

Q. Do you know what that project was about?

A. I can't swear to it.

Q. To the best of your knowledge.

A. I have an idea they were synthesizing compounds that they thought might be good products to put in -- you know, to flavor the tobaccos with.

Q. Going further down the list: "B411, Burley Impact Study".

A. Huh-uh.

Q. Would that be relating to nicotine levels in any way?

A. No. I don't think so. I don't think it had anything to do with nicotine.

Q. The one above that, "B410," is "Menthol Delivery". That's one where you were the project leader.

A. Oh. Yeah, we were looking at puff by puff menthol delivery, first puff versus second,

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third, fourth, fifth puff. You know, the overall profile of menthol delivery in a given cigarette.

Q. Was it the idea to try to make the menthol delivery the same on each puff?

A. No. It was just essentially to look to see how it did deliver.

Q. You weren't trying to change delivery, you were just looking to see what the delivery was?

A. Yeah. Probably going to check our competitors as well.

Q. Do you know whether menthol delivery was the same in each puff, or that it changed?

A. I don't remember.

This is like the other page.

Q. The second page, I think, is an earlier draft.

A. Yes.

Q. Well, it may be a later draft, actually. I see February 20th, 1982, if I can interpret the date which is partially produced on our Xerox.

A. Uh-huh. Yeah, it looks like it may be a little later.

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Q. And among the projects listed here "B424," near the bottom of the page, "Cigarette Headspace and Additives".
A. Uh-huh.
Q. You're listed as the project leader. Do you know what that project was about?
A. Apparently we were trying to -- pack aroma, looking at pack aroma, trying to determine if we could see what was in the tobacco that would give it an aroma.
Q. What does "headspace" mean, in this context?
A. That -- you know, you open a can of coffee and you have -- what you smell would be considered headspace. You don't smell the actual tobacco, you smell -- coffee, just a --
Q. I see. So this is the tobacco smell you would get when you first open up a pack?
A. Yeah. Right.
Q. And was the idea to put some additives into the product to make it smell better or more appealing to the consumer?
A. That might be, long-term. But it was just to see what we were smelling, if we could determine that, and if -- if ours was different

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from our competitors'.

Q. Was yours different from your competitors'?

A. I don't remember. There are thousands of little feet that come out when you get -- thousands of individual components are present in headspace.

Q. The next item is "Vent Location and Semi-Volatiles." That's also a project that you were the project leader of. Do you recall what that was about?

A. No. But I -- it was just -- had to do with the -- the openings in the filter. I don't know --

Q. That's the vent location?

A. I don't know if we ever did anything on it.

Q. What are semi--olatiles?

A. Excuse me. The -- they could probably be characterized as easily chromatographable condensate materials.

Q. A component of tar?

A. Yeah. Sort of like the volatiles on the pack; it would be the volatiles of the condensate.

I don't know why we wanted to know

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that.

Q. Did you do research to determine whether the vent location would affect the amount of tar that a smoker would receive?

A. I don't think we did that.

Q. Were you doing research to determine whether the vent location would affect the amount of nicotine that a smoker would receive?

A. I don't know if we did that either. That's a good idea.

And as I say earlier, I don't mean to be -- that was something that I don't think we pursued to any extent. It was a proposal that was apparently not of much interest, or that we didn't have time to do.

Q. Do you know whether Lorillard conducted studies to compare the amount of tar and nicotine that an average smoker gets when smoking a cigarette as compared to the FTC reported amounts?

A. No. I don't know that we ever did anything of that nature.

Q. Do you know whether Lorillard did any research through outside consultants?

A. Not to my knowledge.

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Q. Do you know whether Lorillard did any research through foreign consultants?
A. Not to my knowledge.
Q. Foreign subsidiaries?
A. I don't think we had any.
MR. GOTTLIEB: Why don't we go off the record.
VIDEOGRAPHER: We're going off the record at 2:53 p.m.
(RECESS TAKEN FROM 2:53 P.M. TO 3:02 P.M.)
VIDEOGRAPHER: We're going back on the record at 3:02 p.m.
MR. GOTTLIEB: Please mark as Exhibit Number 28, a document dated July 2, 1983, from M. A. Sudholt to Ms. Ireland, subject "Organoleptic Evaluation of Cigarettes Containing Nicotine-Silica in Cavity Filters".
(EXHIBIT NUMBER 28 WAS MARKED FOR IDENTIFICATION)
BY MR. GOTTLIEB:
Q. The summary on page 1 states: (Reading)

> Although smoke lab data indicated no significant changes in NIC to DPM ratios, the physiological effect of

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nicotine was noted in the organoleptic evaluation of the treated cigarettes. It appears that this data -- from this data that evaluating nicotine to DPM ratios is not the way to determine if the effect of an augmented nicotine cigarette has been created. It was noted that the cigarettes with the physiological effect did not necessarily have higher smoke pH values.

First let me ask you: Did -- what is nicotine silica? Is that a salt?

A. Beats me. I have -- I don't have any recall on that. I think it was a silica gel, but I don't remember that.

Q. Do you know whether these cigarettes containing nicotine silica were only experimental cigarettes?

A. Oh, absolutely.

Q. Do you know whether nicotine silica was ever used in commercial products?

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A. Not to my knowledge, I would -- no.

Q. When you have the statement NIC/DPM, is that nicotine to tar ratios?

A. Essentially.

(WITNESS REVIEWS DOCUMENT)

Q. What does organoleptic particularly mean in this context? I'm talking about the context of the title of this report.

A. Taste -- taste evaluated, you know. Smoked, essentially.

Q. So, in other words, the conclusion of the report was, if you put silica treated with nicotine into the filter, people who would evaluate the taste would say that this cigarette has a stronger impact?

A. That's what it says.

Q. Do you know whether cigarettes of this type were ever test-marketed?

A. No. To my knowledge, they never were.

Q. Do you know whether any of your competitors ever used filters that had nicotine silica in them?

A. Not to my knowledge, they didn't.

Q. I'm going to show you a document. We'll mark it as Exhibit Number 29. It's dated

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September 23rd, 1983. It's from M. A. Sudholt to Ms. Ireland. The subject is "Repetition of Initial Experiments With Diethyl --

A. Aminoethyl.

Q. -- aminoethyl Cellulose in Filters to Give 16 Percent Increases in Nicotine to Tar Ratios".

(EXHIBIT NUMBER 29 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. Do you recall receiving this document on or about September 23rd, 1983?

A. I remember something about this.

Q. The subject?

A. Vaguely.

Q. What is diethyl aminoethyl cellulose?

A. As well as I remember, it's the little sheets of Bounce, or something like that, that you put in your dryer as an anti-static.

Q. Do you know why an experiment was made using that material in filters?

A. Dr. Minnemeyer, as well as I remember, suggested that.

Q. Do you know why he thought that this would be an interesting experiment to do?

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A. Because of the nature of that material, whatever that was.

Q. Do you know what he referred to when he said the nature of that material? Was he talking about its acidic nature, or its basic nature --

A. It -- it -- it should be a basic -- a somewhat basic material.

Q. It states here: (Reading)

> The first cigarettes prepared with diethylaminoethyl cellulose ion exchanger from a new container gave 25 to 30 percent increases in nicotine to tar ratios when compared to cellulose (solka floc).

Is cellulose the normal filter material?

A. The cellulosic material, yeah. Sort of like paper. Cellulose is paper.

Q. Well, why would he be comparing the diethyl aminoethyl cellulose to regular cellulose?

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A. Because they're different materials.
Q. Okay.
A. The one being basic in nature is the diethylamino cellulose, and the other is just supposedly a neutral.
Q. Are these two materials that are used in filters -- or is one of these materials used in cigarette filters?
A. No.
Q. Are either of these materials used in cigarette paper?
A. No. Not to my knowledge.
Q. Do you recall whether in 1983 Lorillard was attempting to increase the nicotine to tar levels in their cigarettes?
A. I don't know that they were.
Q. Do you know whether Lorillard has used cellulose filters?
A. Is -- in this context?
Q. Well, let's take a look at the last paragraph. About halfway down in the last paragraph it says: (Reading)

> Ecusta had made some cellulose filters using different celluloses and

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additives about eight years ago; however, they are no longer working in this area.

Do you know whether Lorillard has ever used cellulose filters?

A. I do not know.

Q. Do you know whether any of Lorillard's competitors have ever used cellulose filters?

A. No.

If they hadn't made any in eight years, they probably hadn't made many.

Sorry about that.

Q. I'm going to show you a document. We're going to mark it as Exhibit 30. It's dated December 6th, 1983, from J. M. Johnson to Ms. Ireland. Subject is Six-fold Increase in Percent Free Nicotine Using Phenethylamine as a Filter Additive".

A. Phenethylamine, uh-huh.

Q. I'm doing the best I can, ma'am.

A. That's good enough. I don't understand it either.

Q. I was hoping you would.

MR. GUSTAFSON: Next exhibit.

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MR. GOTTLIEB: Don't rush me.

(EXHIBIT NUMBER 30 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. Who is J. M. Johnson?

A. She was a chemist that worked under my supervision.

Q. In 1983?

A. Must be. I don't remember how long.

Q. It states in the first paragraph: (Reading)

> The object of this experiment was to increase smoke pH and therefore increase free nicotine in smoke by adding an aryl alkyl amine to the filter.

Do you know why anyone at Lorillard would be interested in increasing smoke pH in its cigarettes?

A. Again, we go back to the old thought process of pH and impact are related, and satisfaction and pH and impact and all of those are intertwined. I don't know that they are.

Q. So J. M. Johnson was one of the people who was investigating as to whether or

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not smoke pH was related to impact and satisfaction?

A. On a casual basis.

Q. Do you know what his background was?

A. She?

Q. Or her background. Sorry.

A. She was a chemist.

Q. Okay.

A. I think her degree was from State, NC State. I'm not sure.

Q. The third paragraph on the first page says: (Reading)

> Lark Lights treated with PEA showed increased smoke pH and a six-fold increase in free nicotine, while mainstream nicotine and CPM levels remained almost unchanged. This data is consistent with values reported in the patent.

First of all, do you know how Ms. Johnson was able to calculate a six-fold increase in the free nicotine?

A. She used the Henderson Haselbach equation,

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as she indicates in the first paragraph here.

Q. And is that --

A. Which is a correlation with pH and nicotine, which is a purely hypothetical correlation and, as far as I'm concerned, is invalid.

Q. Did you have an understanding in 1983 that this correlation was invalid?

A. I've always felt it was. In 1976.

Q. Did you tell Ms. Johnson that her use of this correlation was improper, it's bad science?

A. It wasn't improper. It was the only thing that was out there to use. You know.

Q. Did you tell her that it was useless, that you had no faith in it?

A. That has nothing to do with it. It's the only thing out there that you can use. So you look -- what -- what you're doing is not looking at absolutes; you're looking at relationships, a control versus an experimental, and look at the differences in pH values.

Q. And through this method of calculation, scientists believed that they could determine the amount of free nicotine; is that

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correct?

MR. GUSTAFSON: Objection. Mischaracterizes her testimony.

MR. GOTTLIEB: Well, I didn't say all scientists. Some scientists.

MR. GUSTAFSON: Object on the grounds it requires speculation.

THE WITNESS: In this patent?

MR. GOTTLIEB: Yes.

THE WITNESS: That's the procedure that they used to estimate free nicotine. And Ms. Johnson just was reproducing -- or trying to reproduce their results, using the same calculations, I would imagine. I don't remember and did not challenge whether she used the exact calculations or not, but very likely did, to duplicate their results.

BY MR. GOTTLIEB:

Q. Well, did -- to your knowledge, did scientists at Lorillard use the Henderson Haselbach equation to determine free nicotine in cigarettes?

A. There was no attempt to determine free nicotine in cigarettes, per se. This was an isolated experimental cigarette, and this was

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used -- I don't know that it was used again. It may have been. But it's -- I don't really remember what this calculation was.

Q. Well, is it fair to say that you have no faith in the validity or the usefulness of the Henderson Haselbach equation?

A. Not a great deal.

Q. On what basis do you have that opinion?

A. I just don't think pH is a direct measure of free nicotine. I just don't believe that it is.

Q. Would it be fair to say that there are people at Lorillard who would have disagreed with you on that subject?

A. Probably.

Q. Did you ever discuss that subject with Ms. Johnson?

A. I don't remember specifically. But I'm sure we had -- both had an understanding that it was all that's out there.

Q. Well, whenever you saw a memo which had in it a calculation that was meant to determine the amount of free nicotine, you were under the understanding that the person who

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created that memo or created that chart was using the Henderson Haselbach equation; is that correct?

A. As I said, I don't know what this equation is. There are -- there are equations and pH measures in the literature that relate pH to free nicotine. And I -- as far as I'm concerned, that is not a valid pH -- I mean, that is not a valid measure of free nicotine. There are too many other things going on. You know, it's a -- it's a very active state, smoking is.

Q. Uh-huh.

A. It's not passive. And it's -- you know, as far as I'm concerned, it's not a -- an accurate measure of absolute free nicotine. It may give you an indication.

Q. A range?

A. It may.

Q. In other words --

A. But, again, I -- I don't know. You know, I don't know how nicotine behaves.

Q. Well, are you --

A. Either free or bound. I don't know.

Q. Do you feel there are people at

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Lorillard who have a better understanding of free nicotine and attempts to measure it than you have?

A. Oh, you wouldn't be hard pressed to find that, probably. At least, you know, they believe some of the stuff and I just happen not to.

Q. Would one of the people who believes some of that stuff include Ms. Johnson?

A. I don't know what she --

MR. GUSTAFSON: Object to the form of the question.

BY MR. GOTTLIEB:

Q. Well, do you -- can you tell me the names of some people who have been working at Lorillard who would have, in your opinion, greater knowledge than yourself on the subject of free nicotine and, in particular, the measurement of free nicotine?

A. No. I don't know. Maybe everybody, maybe nobody. I don't know.

Q. It's not a subject that you discussed with others at Lorillard?

A. No. It's not what we talked about at lunch.

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Q. Well, did you ever, personally, use the Henderson Haselbach equation, or any other method of determining the amount of free nicotine in a cigarette?

A. No.

Q. But there were researchers at Lorillard who did that; is that correct?

A. This is the first reference I've seen to it.

Q. But in other documents we've seen, where it mentions the calculation of free nicotine, that would be an indication that some scientists at Lorillard were using some sort of equation to calculate the amount of free nicotine?

A. Very likely. But again, I'm not sure it's this one or -- or which one, or whether it's a different one every time they do it.

Q. Well, would it be fair to say that there are -- or that there have been scientists at Lorillard who believed that one could calculate the amount of free nicotine in cigarette smoke?

MR. GUSTAFSON: Object, to the extent it requires her to speculate as to what

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other people believed.

THE WITNESS: Yeah. I have no idea.

BY MR. GOTTLIEB:

Q. Well, do you think that Ms. Johnson would have written a memo to you stating that she found a six-fold increase in percent of free nicotine unless she had some confidence in her ability to calculate the amount of free nicotine?

MR. GUSTAFSON: Objection. Again, requires speculation.

THE WITNESS: She's not saying that she believes this. She's saying that, based on this calculation, this is what would be reported. She doesn't say that she believes that.

BY MR. GOTTLIEB:

Q. Do you think --

A. And I don't know whether she does or not.

Q. Do you think a scientist would report to you a calculation that -- that he or she didn't believe in?

MR. GUSTAFSON: Objection to the form of the question.

THE WITNESS: They may, if there's

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nothing else out there. Is --

BY MR. GOTTLIEB:

Q. Well, would -- would you expect that scientist to indicate in the memo, I have little faith in this calculation, nevertheless, here are the figures?

A. That's the reason that -- very likely the reason that that was stated as such.

Q. What do you mean by "stated as such"?

A. This is the calculation she used --

Q. Stated --

A. -- therefore, you know, take it for what you want to take it. And -- and also those that are copied on the memo.

Q. So she stated what calculation she used, but she didn't state that she did have faith in it or that she did not have faith in it?

A. Not that I can find.

Q. And, as you sit here today, you have no reason to believe that she did not have faith in that memo or in that calculation.

A. I have no idea whether she did or didn't.

Q. Do you know whether potassium

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acetate was ever used in filters for experimental cigarettes at Lorillard?

A. It seems like there may -- that -- that rings a bell, but I don't recall in what context.

Q. Let me show you a document. We'll mark it as Exhibit Number 31. It's dated July 25th, 1984. It's again from Ms. Johnson to Ms. Ireland. The subject is "Evaluation of Potassium Acetate as a Cellulose Filter Additive".

(EXHIBIT NUMBER 31 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. The document begins as follows: (Reading)

> Potassium acetate was evaluated as a possible cigarette filter additive. The object of this experiment was to increase nicotine to CPM levels in smoke by adding an alkali compound to cellulose filters to deacidify the cellulose.

Do you know whether potassium

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acetate has ever been added to filters that Lorillard has put on commercially sold cigarettes?

A. Not to my knowledge.

Q. Do you know whether any alkali has been added to filters by Lorillard in commercial products?

A. Not to my knowledge.

Q. Under "Conclusions" it states: (Reading)

> Addition of potassium acetate caused significant increases in nicotine delivery (28 percent/ 45 percent) and nicotine to CPM levels (19 percent/ 36 percent) relative to the control. Only minor differences were noted in puff count, P.D. and CO levels. Filter pH increased slightly. Potassium acetate and other alkali or alkaline earth compounds as additives to cellulose filters will be

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investigated further.

What is P.D.?

A. Pressure drop.

Q. Do you know whether other alkali or alkaline earth compounds were investigated as filter additives by Lorillard?

A. I don't really remember.

Q. Do you know why Lorillard decided not to use potassium acetate in filters for commercial sale?

A. Huh-uh.

Q. Is that a no?

A. I don't know. I don't know. I'm sorry.

Can't you hear my head rattling? Can't you tell a yes rattle from a no rattle?

MR. GUSTAFSON: I could hear it.

THE WITNESS: I thought so.

BY MR. GOTTLIEB:

Q. Was this experiment part of the nicotine augmentation project that we've been talking about?

A. It doesn't indicate that.

Q. Do you have any knowledge as to whether it would be or not?

A. No. It may loosely have been related. I

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don't know.

Q. Do you know whether experiments in the use of additives, in order to increase nicotine to tar levels, continued in the '90s in Lorillard research?

A. I don't remember.

Q. Did it come to an end at some point in time? Research, in other words, to increase the nicotine to tar levels.

A. I don't know. I don't know whether it came to an end or it just was not renewed at the beginning of each year, or whatever.

Q. Well, do you recall whether in the last few years that you were at Lorillard whether such experiments were continuing?

A. I don't remember there being any interest. I don't know. I don't remember.

Q. Do you recall whether anybody ever said, you know: Enough is enough; we've spent ten years on this and we couldn't do anything commercial with it, so let's stop it now?

A. Don't remember hearing anything like that.

Q. Do you know whether --

A. I would have ignored it.

Q. I'm sorry?

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A. I don't remember hearing anything like that.

Q. Do you know whether any of the work done related to the nicotine augmentation project -- and I'm talking about filter additives, and nicotine migration, and adding nicotine to slurry, and adding free nicotine to tobacco, all these various experiments, adding ammonium compounds to slurry or to tobacco. Did any of these experiments have any practical use?

MR. GUSTAFSON: Objection. The question is vague and ambiguous.

BY MR. GOTTLIEB:

Q. By practical use, I mean use in a commercial product.

A. No.

Q. Well, I don't necessarily mean --

A. Not to my knowledge. No.

Q. Let me -- let me expand the question to say directly or indirectly. It doesn't have to be the direct use of the exact amount of a particular chemical into an exact product. But you gain certain knowledge. And that knowledge that you gain regarding ventilation, regarding migration, regarding pH, was that knowledge used

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in production of new products by Lorillard?

MR. GUSTAFSON: Objection to the form of the question.

THE WITNESS: Not to my knowledge.

BY MR. GOTTLIEB:

Q. Was that knowledge used to improve existing products by Lorillard?

MR. GUSTAFSON: Objection. Just asked and answered.

MR. GOTTLIEB: No, I asked about new products. Now I'm asking about existing -- improving existing products.

THE WITNESS: Not that I know of. Not that I'm aware of.

MR. GUSTAFSON: Lou, can I interject for just one moment. A number of documents that you've used as exhibits have been stamped "Confidential: Minnesota Tobacco Litigation". It's my understanding that that designation is sufficient to designate the document as confidential in this case.

MR. GOTTLIEB: The New York case.

MR. GUSTAFSON: Correct. Under the -- under the protective order entered in the New York case. Is that right?

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MR. GOTTLIEB: That's my understanding.

MR. GUSTAFSON: Okay. And it's also my understanding, and I think the court reporter has already executed the Attachment A to the protective order and that the videographer will also do the same, pursuant to the terms of the protective order in this case; is that correct?

Thank you.

MR. GOTTLIEB: Let the record reflect that there were nods.

MR. GUSTAFSON: Yes. Up and down. Up and down.

THE WITNESS: I don't even know what you're talking about.

MR. GUSTAFSON: You need a verbal response.

THE WITNESS: I don't guess I need to know.

MR. GUSTAFSON: Just some legalese.

THE WITNESS: It sounded like it.

BY MR. GOTTLIEB:

Q. Let me show you a document dated August 3rd, 1984. We'll mark it as Exhibit 32. It is from M. A. Sudholt to Ms. Ireland. The

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subject is "Evaluation of Cellulose Derivatized With" -- uh-oh. Could you continue reading for me, please, Ms. Ireland.

A. "Dimethylglycine.hydrochloride to Give a 23 Percent Increased Nicotine to DPM Ratio".

Q. Thank you.

The document continues: (Reading)

> One object of the nicotine project has been to increase the level of nicotine relative to tar in cigarette smoke.

Did you recognize that as one of the objects of the nicotine project?

A. Changing ratios?

Q. Yes.

A. Yeah.

Q. Do you know why Lorillard was interested in changing the ratio of nicotine to tar?

A. See if it gave a better product, a more satisfactory product. I -- I -- no one ever came down and told me that.

Q. Were you under the impression that this research was being conducted in an attempt

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to produce a product that would be a big seller in the market?

A. I suppose so. That was a sort of an impression, yeah.

(WITNESS REVIEWS DOCUMENT)

Q. In this document, the experimenter found a 23 percent increase in the nicotine to tar ratio by the use of an unpronounceable chemical, nitrogen nitrogen-dimethylglycine.hydrochloride?

A. Dimethylglycine.hydrochloride, uh-huh.

Q. Do you have an understanding as to why that compound would cause an increase in the nicotine to tar ratio of a cigarette?

A. Do I have an understanding of it?

Q. Yes.

A. Not really an understanding, but it's an amino compound.

Q. Well, why would an amino compound cause an increase in the nicotine to tar ratio?

A. It's basic. I don't know whether this was because of its basicity or because of its construction. I don't know which active sites might be present.

Q. Do you know whether this compound

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was ever used by Lorillard in a commercial product?

A. Reading the rest of the -- of the memo, it would have been an impossibility.

Q. And what is there in the memo that tells you that?

A. Very small particles in pressure drop would be so excessive you'd never be able to use it.

Q. This is just an experiment to see if you could learn something which would hopefully lead to a variation on this, that would lead, in turn, to a cigarette with an increased nicotine to tar ratio?

MR. GUSTAFSON: Object to the form of the question.

MR. GOTTLIEB: And I'll withdraw the question because it was incomprehensible to me.

THE WITNESS: I would -- I would answer it if you'd stopped with a learning process. It was a learning process.

MR. GOTTLIEB: The first time that I withdraw my own question and I get an answer. I'll try doing that more frequently.

THE WITNESS: That'll mess you up, won't it? I told you already I told you

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everything I know; I must have told you more than you know.

MR. GOTTLIEB: Ma'am, you know a lot more about this than I do. So --

THE WITNESS: That's not much. You've studied these documents since I have.

(EXHIBIT NUMBER 32 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. I believe you stated a few minutes ago that one of the objectives of the nicotine project was to increase the nicotine to tar ratio. Would you say that that was the major objective of the nicotine project?

A. I would say that was one of the objectives.

Q. Let me show you a document dated February 6th, 1985. We'll mark that as Exhibit Number 33. It's from M. A. Sudholt to Ms. Ireland. Subject is "Increased Impact of Cellulose-Malic Acid Filter Containing Migrated Nicotine".

(EXHIBIT NUMBER 33 WAS MARKED FOR IDENTIFICATION)

BY MR. GOTTLIEB:

Q. The memo begins as follows: (Reading)

The major objective of

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the nicotine project has been to increase the physiological impact and/or nicotine to tar ratio in ultra low tar cigarettes.

Would you agree with that statement?

A. Okay. I'm -- that's a -- a yes, I guess.

Q. Okay. It then says: (Reading)

Ultra low tar cigarettes generally have little taste or impact and high pressure drop.

Would you agree with that?

A. That's what she says. I'm -- I'm not --

Q. I'm not asking if I read it correctly. I'm asking, do you agree with the statement?

A. That's what she says. You know, that sort of information comes from product development people.

Q. Was Ms. Sudholt in product development?

A. No.

Q. She was in research?

A. She was in analytical development. She was

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in my section.

Q. She was in your section? She reported to you?

A. That's the Skladanowski that you couldn't remember. Same person, different husband.

Q. Ah. Thank you. I told you you knew more than I did. On a lot of subjects.

A. I'm full of it. Uh-huh.

Q. The memo continues: (Reading)

> One of the approaches which has been studied over the past two years to achieve the goal is adding nicotine to the filter.

Were you aware of those experiments in which nicotine was added to filters in experimental cigarettes?

A. I think we went over a couple.

Q. And those experiments continued in '83, '84, '85, in those years?

A. There may have been one or two spattered about.

Q. Do you know whether those experiments continued beyond that date?

A. I don't remember the dates.

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Q. If you would take a look at the conclusions on page 2. First it states: (Reading)

> The impact of the smoke was increased by migrating nicotine to the filter compared to the same filter with no migration.

Does that mean that the consumer, the smoker, was obtaining more nicotine because nicotine migrated towards the filter?

MR. GUSTAFSON: Objection. Requires speculation as to what the author of this document meant.

MR. GOTTLIEB: As to your understanding.

THE WITNESS: I don't know. I don't know if they -- if this is what took place.

BY MR. GOTTLIEB:

Q. Well, how else could you explain the fact that the impact of the smoke was increased by migrating nicotine to the filter?

MR. GUSTAFSON: Objection. It's argumentative and you're asking her questions about -- you're wanting her to interpret a

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document that she didn't even author.

MR. GOTTLIEB: If she has --

MR. GUSTAFSON: It was authored by someone else.

MR. GOTTLIEB: If she has an understanding. This document was sent to her. She certainly knows about the subject. She was involved in the nicotine augmentation project for more than ten years.

MR. GUSTAFSON: She just said, essentially, she doesn't know what that means.

THE WITNESS: I don't know for sure that that's what changed the impact. And if you modify the filter, you change lots of things. That may just have been one casual modification.

BY MR. GOTTLIEB:

Q. The second item states: (Reading)

> Filters treated by migration gave more basic smoke. PH increased about one unit.

Do you know why migration would affect pH?

A. If -- if it -- nicotine is -- is basic. But, you know, the material itself -- no, I

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don't know. Whether it allowed more ammonia and other materials to go -- pass through the smoke. You know, we were measuring the condensate; we're not -- you know.

Q. I understand that.

A. So I don't -- no, I don't really know.

Q. Well, wasn't the nicotine migration caused by the use of cellulose malic acid in this experiment?

A. There was one with malic acid and another, apparently, that was -- just had nicotine added. Is that not correct? You know, it's hard to digest this just this quickly.

Q. Let's take a look at the document.

A. Uh-huh.

I don't know how -- I don't know the series of these experiments.

Q. So in this experiment, if you look at the first page, the third paragraph --

A. Uh-huh.

Q. -- it says, about five lines down: (Reading)

As was reported previously, about four times as much nicotine was migrated

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to cellulose malic-acid test filters as compared to cellulose acetate filters. Nicotine was applied to filters at four different levels via migration.

Does that indicate to you that the use of an acid, in this case cellulose malic acid, in the filter caused nicotine to migrate towards the filter?

A. That would seem so. But then you look at number 3 and it says those filters were more acidic. So there seems to be a conflict in my mind as to what happened here. I'd have to go back and really try to figure out what happened. Because it seems a direct conflict with -- do you agree?

Q. Let's take a look at the last -- the last conclusion here where it says "Future Work".

A. Uh-huh.

Q. (Reading)

Cigarettes will be made to test the effect of malic acid filters on the migration

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of nicotine from the tobacco to the filter. This approach may produce an increased impact in ultra low tar cigarettes.

Do you know if that work was conducted?

A. I don't remember if that was carried forward or not.

MR. GOTTLIEB: Off the record a minute.

VIDEOGRAPHER: We're going off the record at 3:46 p.m.

(RECESS TAKEN FROM 3:46 P.M. TO 3:51 P.M.)

VIDEOGRAPHER: We're going back on the record at 3:51 p.m.

BY MR. GOTTLIEB:

Q. Ms. Ireland, we began this deposition, the first exhibit, talking about addiction. And I think it's only proper to go back to that first exhibit and talk a little bit more about it before we call it a day.

So here is that Exhibit Number 1. And I wanted to ask you a couple of things that I didn't ask you the first time, and then we'll

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take off from there.

About five lines down, first paragraph, it states: (Reading)

> Indications are that the smoker adjusts his smoking habits to satisfy the desire for nicotine either by frequent or large puffs on the cigarette or smoking a large number of cigarettes.

Do you have a general understanding that smokers adjust their smoking patterns in order to obtain a particular amount of nicotine?

A. No.

Q. Do you know whether smokers do that or not?

A. I think some do.

Q. If you gave a heavy smoker who smokes a high-nicotine cigarette, full flavor cigarette, and you gave that smoker an ultra low cigarette and say, That's all you can smoke, do you believe that smoker would -- would change his smoking habits?

MR. GUSTAFSON: Object to the form.

THE WITNESS: They may.

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BY MR. GOTTLIEB:

Q. In what way?

MR. GUSTAFSON: Again, objection. I think it calls for gross speculation.

MR. GOTTLIEB: Well, I'm not talking about one particular individual. I understand that individuals react differently.

BY MR. GOTTLIEB:

Q. But, in general, would a heavy smoker of high flavor -- full flavor cigarettes change their smoking behavior or their smoking pattern if they had to smoke an ultra low tar cigarette?

MR. GUSTAFSON: Object to the form of the question.

THE WITNESS: I can't -- I can't answer that. You know, I smoked, and I don't remember that I ever adjusted any smoke patterns. So I can't speak for other people.

Q. Have you ever read any studies on that subject?

A. Not specifically. But maybe, you know, something -- you know, I don't -- I don't have a -- a specific recall of -- of anything exactly along those lines. I'm sure that I probably

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have read some things, but ...

Q. Well, when you wrote, back in 1976, that indications are that the smoker adjusts his smoking habits to satisfy the desire for nicotine, what were you relying on in making that statement?

A. That was probably a direct pickup from the -- something I'd read in the literature. Probably.

Q. So somebody who wrote and contributed to the scientific literature had this opinion, you thought that that was an opinion that made sense. And you put it into this memo; is that correct?

MR. GUSTAFSON: Objection. That completely mischaracterizes her testimony. She did not testify that she thought whatever opinions espoused in this literature was opinions she agreed with.

THE WITNESS: I -- I--

MR. GOTTLIEB: Go ahead.

THE WITNESS: I don't necessarily agree with it. But that's what was in the literature, so that's what you -- you used. Since that time, I would disagree with it.

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BY MR. GOTTLIEB:

Q. When you're saying it was in the literature, are you saying that it was some aberrant, strange, you know, solitary opinion out there? Or was this the consensus of the scientists who wrote on the subject?

A. This may have been in one reference. It may have been in two. It may have been a review of something I read. And I certainly really don't remember where I extracted this from.

Q. Okay. As we sit here today, do you have an opinion -- I know you're not an expert in the area --

A. Uh-huh.

Q. -- but do you have an opinion on whether or not nicotine is addictive?

A. My opinion is that it is not.

Q. And is that an area in which, to your knowledge, Lorillard has done any research?

A. About whether or not nicotine might be addictive?

Q. Yes.

A. Not that I know of.

Q. Is that an area of conversation among researchers at Lorillard that -- you know,

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with which you participated in such conversation?

A. No.

Q. Was it a subject of any memos that were passed around in Lorillard?

A. I don't know. It may have been.

Q. You don't recall any?

A. Not from twenty years ago. But, again -- you know --

Q. Maybe from -- maybe from four years ago. You know, if you saw one in 1993, please tell me about it.

A. If I saw one that -- that was there, that might refresh my memory. But I don't really remember any specific documents of that nature.

Q. Okay. Do you recall whether the U.S Surgeon General ever made a statement to the effect that nicotine is addictive?

A. I've heard that said.

Q. Do you know when he made that statement?

A. Probably in the last four or five years. I don't remember. But it's been fairly recent.

Q. When you heard -- did you hear that statement through the general media? Or --

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A. Did I hear it to -- when it was made to the general?

Q. Well, did you hear it through TV, or read it in a newspaper? How did you find out about the U.S. Surgeon General's --

A. I don't remember whether I -- I saw it or whether somebody said he said. You know, that sort. I don't remember.

Q. But you didn't -- you didn't get that information through a Lorillard memo, did you?

A. No.

Q. Did it become a topic of conversation at Lorillard at the time that the U.S. Surgeon General made that statement that nicotine was addictive?

A. No. Not that I was a part of.

Q. Okay. Did it change your mind in any way? I mean, you told me that you don't -- you didn't think it was addictive. Today you don't think it's addictive. Did -- for -- for two days in there when he -- when he made that statement, did you think: You know, it probably is?

A. No, I've never felt that way.

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Q. So are you saying that the statement by the U.S. Surgeon General had no effect upon your beliefs one way or another?

A. That's correct.

Q. Why is that?

A. I just happen not to believe that that's the case. That's my belief.

Q. Okay. I mean, do you know what the Surgeon General relied on in making that statement?

A. No.

Q. Do you know whether he relied on reports by respected scientists?

MR. GUSTAFSON: Objection. She just said she didn't know what he relied upon. How can she possibly -- how could she respond to the question?

THE WITNESS: I -- I don't know what his reason for that was.

BY MR. GOTTLIEB:

Q. Did you hear former FDA commissioner Dr. Kessler make public statements to the effect that nicotine is an addictive substance?

A. I don't know that I heard that specifically or whether I've heard it indirectly.

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Q. Same as with the --
A. But I think --
Q. -- Surgeon General?
A. I didn't even know who that was that did it, but if you say that's who said it, then -- I heard it from somebody, either directly or indirectly.
Q. And when FDA Commissioner Kessler made that statement, did that have any effect upon your beliefs as to whether or not nicotine is addictive?
A. No.
Q. Have you heard that Bennett LeBow -- well, let me step back a second.

Do you know whether Bennett LeBow is a -- either the chairman or the president of Liggett Group, a cigarette manufacturer?
A. Do I know him?
Q. Not personally. Do you know of him? Have you heard of him?
A. I've heard that name. And I don't know what his position is.
Q. Do you know whether he's made any public statements regarding whether or not nicotine is addictive?

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A. No. I don't know.

Q. If I were to represent to you that Bennett LeBow, who is the head of a cigarette manufacturing company, made a public statement to the effect that nicotine is addictive, would that influence your beliefs --

A. No.

Q. -- on that subject?

A. No.

Q. You have taken a position that -- that nicotine, in your opinion, is not addictive. What is it that has made you believe that?

A. I just don't think it is. You know --

Q. Have you read any studies that state that it is not addictive?

A. Not that I specifically remember.

Q. Do you remember that you read some studies, even if you don't remember which specific ones?

In other words, do you remember reading of any study, even if you don't remember the name of the study or the author of the study, do you remember reading studies saying that nicotine is not addictive?

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A. No.

Q. Do you remember testimony given before Congress in 1994 by the CEOs of the cigarette manufacturing companies all to the effect that nicotine is not addictive?

A. You need to repeat that.

Q. Do you recall reading about, in the newspaper, or seeing on TV, statements given by the CEOs of the leading cigarette manufacturers in the United States to the effect that nicotine is not addictive?

MR. GUSTAFSON: I object, to the extent that you're mischaracterizing what their congressional testimony was. But you can -- you can respond.

THE WITNESS: They testified that nicotine is not addictive.

BY MR. GOTTLIEB:

Q. Yes. Do you recall reading that or seeing that on TV?

A. Not specifically. I don't -- you know, I don't remember. That has never been anything that I'm concerned with.

Q. In view of the fact that people like the Surgeon General and the FDA commissioner

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have stated publicly that they believe that nicotine is addictive, do you think it's reasonable for an average smoker - not a scientist, just an average smoker - to reject that statement and to believe that nicotine's not addictive?

MR. GUSTAFSON: Objection. This requires gross speculation on her part as to what the, quote, reasonable smoker may or may not believe, whatever a reasonable smoker is. And who knows what that is.

MR. GOTTLIEB: You can answer the question.

THE WITNESS: Some may, some may not. But there's enough reason, with government and politicians being as they are, to reject anything that they say, even though they're entitled to their opinion.

BY MR. GOTTLIEB:

Q. And, therefore, it's not unreasonable for an average smoker to reject the statements by people like the Surgeon General or the FDA commissioner on the subject of whether or not nicotine is addictive?

MR. GUSTAFSON: Object to the form

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of the question.

THE WITNESS: There's reason not to believe them, by anyone, I think.

MR. GOTTLIEB: I have no further questions. Thank you very much for your time.

THE WITNESS: Thank you.

VIDEOGRAPHER: This is the end of the deposition. We're going off the record at 4:05 p.m.

(SIGNATURE RESERVED)

(DEPOSITION CONCLUDED AT 4:05 P.M.)

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JURAT

I, Sue Ireland, do hereby certify that I have read the foregoing transcript of my testimony, taken on Thursday, October 23rd, 1997, and have signed it subject to the following changes:

PAGE	LINE	CORRECTION

_____
Sue Ireland

DATE:

Sworn and subscribed to before me on this _____ day of _____.

NOTARY PUBLIC _____

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STATE OF NORTH CAROLINA
COUNTY OF YADKIN

REPORTER'S CERTIFICATE

I, Linda N. Russell, a Notary Public in and for the State of North Carolina, do hereby certify that there came before me on Thursday, October 23, 1997, the person hereinbefore named, who was by me duly sworn to testify to the truth and nothing but the truth of his knowledge concerning the matters in controversy in this cause; that the witness was thereupon examined under oath, the examination reduced to typewriting under my direction, and the deposition is a true record of the testimony given by the witness.

I further certify that I am neither attorney or counsel for, nor related to or employed by, any attorney or counsel employed by the parties hereto or financially interested in the action.

IN WITNESS WHEREOF, I have hereto set my hand and affixed my official notarial seal, this the 24th day of October 1997.

Linda N. Russell, Notary Public
My Commission Expires 9/3/02

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